Information Technology Effects on Tunisian College Students; Tunisian English Majors as a Case Study

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Information Technology Effects on Tunisian College Students;

Tunisian English Majors as a Case Study

By

Ahmed Lachheb

March 2013

Master’s Thesis
Submitted to the
Graduate Faculty of the College of Education
At Grand Valley State University
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Grand Valley State University
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Ahmed Lachheb
To Hassoun,

Because without a great education, the revolution will not be a success in our dear Tunisia...
Abstract

Tunisia has been recently in the worldwide news since December 2010. A country where the “Arab Spring” started that lead to a major political, economic and social shift in the Middle East and North Africa’s region. Change in all the country’s systems and dynamics is occurring on a daily basis during the current post-revolutionary period. However, Tunisia’s profile in academic journals and research is absent due to the lack of research work. In a country peopled with about 10 million, almost half a million students are attending 239 public and private higher educational institutions\(^1\). Seeking higher education is the only option for Tunisian youths due to the lack of natural resources and economic booming in the country. The need for a case study research to bring an authentic description of Tunisian academia has never been crucial than before. Indeed, scientific research is needed to start the country’s profile in academic journals and to provide accurate findings for decision makers in planning and implementing change/reforms. This study aimed at investigating the technology situation in the Tunisia’s higher educational system through a case study approach. The finding of this study revealed that Tunisian English language majors observed have positive attitudes and perfections toward information technology, despite the limited technology resources being used at the university where the study took place. Also, Tunisian students studied have a high technology literacy level as information technology positively impacted their motivation, performance and interest in learning.

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Chapter One: Introduction

Problem Statement

In Tunisia, social media, English language discourse and technology were used heavily to overthrow one of the brutal dictatorship regimes in the world. Like many other countries, technologies in Tunisia are embedded in everyday discourse and activity. This embedding is a hallmark of the 21st century and it enabled technologies to slip into the background of human lives, as Bruce and Hogan, (1998) argued. Also, the absence of research that portrays the situation of technology in the Tunisian higher educational system is a noticeable gap in the literature. The need for a case study research to bring an authentic description of Tunisian academia has increasingly become crucial with the newer technologies now available. Indeed, scientific research is needed to start the country’s profile in academic journals and to provide accurate findings for decision makers in planning and implementing change/reforms.

Scientific educational research stresses the importance of bringing educational technologies back to the foreground to investigate some variables being crucial to have a better understanding over a specific situation (Chapelle, 2003). Chapelle’s call for a renewed examination and the giant absence of educational research on technology presence in the Tunisian higher educational spectrum add an important boost to conduct this research.

An extensive amount of time and resources with different research methods are needed to investigate many issues/questions related to the Tunisian higher educational system. A case study approach is the most practical method to investigate the effect of information technology (IT) on higher education and Tunisian students, taking advanced
English language (EL) learners as a convenience sample for this case study. The variables that are measured and investigated include: attitudes and perceptions, effect on motivation, interest, and effect on academic performance.

The presence of IT in EL classes results in remarkable changes occurring in the teacher’s expectations about the abilities students have to acquire in order to be successful EL users. According to Chapelle (2003) and Lewis (2009), these abilities required by EL users have to be directly relevant to EL teachers and their teaching approach. The strong relationship between technology and language use should motivate all language professionals, mainly researchers, to stop and reflect on ways technology is changing the profession of English language teaching in particular, and applied linguistics as a whole (Chapelle, 2003).

An initial problem for researchers and educators arises when starting to design a scientific research study in this context of technology in higher education: how researchers can reflect on an educational phenomenon that is largely invisible and almost untraceable (Chapelle, 2003). Further, as educators become accustomed to using more technology and increasingly taking it for granted, the urgency to research its effectiveness and efficiency diminishes and thus the progress of human innovation in this field. Nevertheless, technology continues to impact lives and education (Chapelle, 2003). Moreover, the integration of information technology into English as a foreign language (EFL) classrooms has been always under investigation from both educational technologists and language learning theorists (Kuang-wu, 2000). This inquiry is evidenced in the extensive current amount of research being done under the umbrella of second language learning theories (Chapelle, 2003; Warschauer & Healey, 1998; Kuang-
wu, 2000). Yet, an extensive online database search reveals that a great amount of
applied linguistics research has been done on EFL teaching/learning with technology in
the United States, in several Anglo Saxon countries (mainly in K-12 public school
settings), in non-Anglo Saxon countries like China, Turkey and a few others, but no
research has been conducted in Tunisia.

**Importance and Rationale of the Study**

Pajares (1992) was an early pioneer in bringing attention to the fact that people,
including educators, tend to rely on beliefs without the desire to seek out new or updated
research. This kind of a practice applied to educational technologies, where multi billion
dollars are being spent, is at risk. Therefore, investigating variables related to educational
technology is crucial to have a better understanding over a specific situation (Chapelle,
2003). The Association for Educational Technology and Communications\(^2\), stated in its
recent publications that “Important to the newest research in educational technology is
the use of authentic environments and the voices of practitioners and users as well as
researchers” (p. 2). Research in educational technology has to seek resolving problems by
investigating issues and suggesting solutions. In case of believing that there is no issue to
investigate, scientific research taught us that any attempt to implement a solution has
always led to new practices and therefore new problems and questions. In the Tunisian
context, and unlike many other countries as the literature search shows, the issue sustains
itself simply because there are no answers to questions which have been not raised yet.
In the non-Anglo Saxon countries, where research on technology in EFL has been done,
universities are ranked among the first top 500 universities in the world (Shanghai, 2010).

\(^2\) See more about AECT on [http://www.aect.org](http://www.aect.org)
Tunisia’s best university was ranked 6719 by the Shanghai Report of 2010. This report take academic publications from the universities’ professors as a main criteria in ranking. More recently, this report disregarded Tunisian universities from the ranking system for the 2012 report.

**Background of the Problem**

Information technology has been used in language teaching since the 1960s (Lee, 2000). According to Warschauer & Healey (1998) as cited in (Lee, 2000), “this 50 years [period] witnesses three main stages which are: behaviorist CALL [Computer-assisted Language Learning], communicative CALL, and integrative CALL” (p. 2). Each of these three stages are related to a certain level of technology innovation and progress as well as specific pedagogical theories. Salhi, (1985) and Derbel, (2001) argue that educational policy makers in Tunisia consider English as “advantageous for fulfilling an important role in creating and sustaining links with the world in terms of knowledge and transfer of technology” (As cited in Melliti, 2008, p. 6). During the Reconstruction of the Tunisian Educational System Act of 2006/2007, the Tunisian government noted that the mastery of information communication technology (aka ICT) is necessary to support professional, innovative and creative teachers (Hamdy, 2007). The implementation of this educational policy was manifested by creating a technology infrastructure that allows teachers in all educational institutions to have access to information technology tools including computers, internet connection, overhead projectors, projectors and more.

Despite these educational reform policies and regardless of the positive report issued by the World Bank in 2007, that greatly praised the magnificent ICT presence in

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3 See more on [http://www.shanghairanking.com/](http://www.shanghairanking.com/)
the Tunisian higher educational system, the best higher education institution in Tunisia ranks 6719 worldwide (Shanghai, 2010). Since Tunisian universities are being ranked behind many third world countries, which suffer from economic problems already overpassed by Tunisia decades ago, and not being among the top 100 in the Middle East and North African region (aka MENA region) classification of universities, the situation of the Tunisian higher educational system can be best described as unsatisfactory and terribly shocking, for mostly all policy makers, educational stakeholders, students and parents (Rkya, 2010). Reasons and explanations vary for the failure of the Tunisian higher educational system.

Brisson & Krontiris (2012) found that classrooms at most public universities (like the institution under investigation of this case study) are not equipped with IT tools like the current norm of the four years institutions in the United States. Educational technology (Ed Tech) usage is still limited to primitive tools: green blackboard, chalk, papers, photocopy machines etc. There are minor usages of overhead projectors (OHP), (only in study days or in conferences sometimes) and PowerPoint presentations. Websites and online modules are rarely used in the classroom. The classroom under investigation, which constitutes the sample of this case study research, has been observed to be the most Ed Tech savvy class and that is due to the instructor’s attitudes, knowledge and advocacy toward Ed Tech and IT tools in particular. What is being observed that students in this class always show motivation and positive attitudes toward the subject unlike in many other classes being offered within the same subject unit and within the same teaching context. Students in this class always perform better in the assessments when IT resources are being integrated in the lecture.
Statement of purpose

A mixed method case study approach that investigates the effect of information technology on EFL Tunisian college students. The variables measured /investigated include: attitudes and perceptions, effect on motivation, interest, and on academic performance.

Research Questions

(A) What are the attitudes and perceptions of Tunisian college students toward information technology?

(B) What are the effect of information technology on college students?

(C) How are information technologies integrated in higher education classes in Tunisia?

Design, Data Collection and Analysis

Participants in this study are non-random convenience sample that consists of 36 students enrolled in two groups (A and B; A=21, B=15. N total=36). Participants are Tunisian English language college students majoring in English language literature and civilization at a Tunisian major university in the south east side of the country. This selection is the most convenience for the research to be conducted in an educational environment open to researchers and with sample students who can perfectly answer survey questions in English language. All participants are enrolled in a weekly two hours class called “TEFL, Teaching English as a foreign language, which is only open to juniors and seniors in the applied linguistics subject module. All human subjects’ approval documentation is provided in Appendices A.
Participants were asked to take a survey called Attitudes and Perceptions Toward Information Technology, adopted from Teacher Attitudes Toward Information Technology, TAT V3.2 Survey Questionnaire (see Appendix A&B) from the Texas Center for Educational Technology at the University of North Texas, by Knezek and Christensen, (1998). In this survey, participants answered questions about their attitudes and perceptions toward IT as well as shared some information about the technology culture of where they live, and their skills in dealing with IT. Also, after two weeks of taking the first survey, participants took another survey called Course Interests Survey, (CIS) (see Appendix B) by Keller, 2010, based on the ARCS [Attention Relevance, Confidence and Satisfaction] model, where they rate their level of interest in the subject being taught by an instructor who always uses IT resources for instructional activities in the class.

In week 10 of the fall semester in 2012, a limited designed “experiment” took place without randomizing the participants. One randomly selected group was taught a lesson where the instructor used varied IT tools such as videos and PowerPoint slides. Another group was taught by the same instructor without using IT resources. Lesson goals and objectives were identical between both groups, whereas the medium was different; a technology (IT) based medium in a group and a traditional medium that consists of the textbook in the other group. The group that was taught without IT is an experimental group, because the intervention consisted of taking off all the usual IT tools that were typically used for teaching and learning purposes by the instructor. Participants in both groups were administered a pretest and a posttest to measure growth from the
sessions, then, an unpaired T-test analysis of both groups’ scores was conducted to investigate potential group differences.

At the end of the class period of the experiment day, both groups took another survey called Instructional Material Motivation Survey (IMMS) by Keller, 2010, (see Appendix A&B) based on the ARCS model, where they were asked to rate their motivation level toward the materials being used for classroom instruction based on the ARCS model variables.

The other sources of data are observations of the two class periods and an interview with the teacher (see Appendix A&B). The collected data were analyzed according to the instructions and formulas that were accompanied to the instruments. The instruments are well tested and have a high rate of reliability. Permission to use them was granted by the creator of the instruments themselves. Excel and SPSS software were used to analyze the numerical data.

**Definition of Terms**

*Educational Technology:* The Association for Educational Communications and Technology, the professional society for Educational Technology (Ed Tech) (2007), defines it as “[...] the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources” (p.1). This educational research falls into the spectrum of educational technology because it investigates the effect of information technology integration (referred in the definition as ethical practice of facilitating learning) in educational settings where English language is taught as foreign language.
**English as a foreign language, EFL:** According to the Pearson Publishing Inc., EFL is “a term referring to the teaching or learning of English in a setting where it is not the predominant language spoken outside the classroom” (p.1). If English is being taught in a country where the first/official language and the second language are not English, this situation here applies to the term EFL. Thus, it is accurate to say that English is being offered as a foreign language and learners are called EFL learners in Tunisia, since the first language (defined by the constitution) is Arabic and the second language is French (due to historical reasons that dates back to the colonial era; Tunisia was a part of the French colonies). Nevertheless, many cited studies in the literature review use the term ESL (English as a Second Language) or ESOL (English for Speakers of Other Languages). For this study, the term EFL will be used despite some literature using ESL or ESOL.

**Information Technology, IT:** The McGraw-Hill Science & Technology Encyclopedia defines IT as “The collection of technologies that deal specifically with processing, storing, and communicating information, including all types of computer and communications systems as well as reprographics methodologies” (MGHSCTE, 2012). Computers, CDs, books, webpages, software, TVs, newspaper and all kind of technologies that can process, store and communicate a given type of information for users are the tools that form the IT field. The usage of IT in education is mainly for instructional or administrative purpose. The objective is improving human performance and enhancing the efficiencies of educational tasks to make it more strategic and operational.
Delimitations of the Study

The foci of the study is on the situation of Information Technology with relation to students learning and teaching at the Tunisian public higher educational environments. The choice of focusing on English language majors who are potential teachers of English language in Tunisia was for the sake of convenience and practicality of data collection as explained earlier. The university where the study took place is part of six major universities in the country where English is offered as degree subject for BA, MA and PhD, and where nearly all of teachers of English language in Tunisia graduate. Also, the selection of students in their 3rd year level (seniors) as participants not freshman level was meant to ensure a high level of maturity in responding to the survey questions, without being worried about expressing personal opinions or being worried about the level of language complexity of the surveys’ items. The university where the study was conducted enrolls about seven thousands students, which provides a large pool of diversity among the students’ participants who have different backgrounds. Also, selecting an approachable professor who was willing to cooperate and open his class for this research was necessary to ensure the success of the data collection process, hence, the main investigator of this study is located in west Michigan.

The professor helping on this study in Tunisia was selected because of his cooperation previously established on past several studies. He is also a known advocate of technology integration and usage for advanced EFL instruction with many publications and conference proceedings in this field. Choosing an experimental group where participants are not used to technology medium/material in their class will not give accurate data. Indeed, all expressed opinions that form the actual data can be a reflection
of first time experience feelings. The experiment for this study was conducted in a two hour snapshots for each group. The sample size and the design of the experiment does not allow to generalize the findings on EFL learners worldwide, yet the reality of the contexts allows to generalize findings with some caution in making conclusions. Two hours may or may not be representative of the weekly routine of this class, since the instructor provided a table of the time allocations in his lesson preparation as well as what technology/IT medium was used in each lesson every week (see Appendix B).

Finally, this study relied on well tested and reliable instruments as an attempt to avoid bias in data collection and analysis, as well as to generate accurate statistical data. The researcher is native of Tunisia who has a background in English language learning and teaching. However, this belonging does not guided the researcher in making decisions about the research design or the instruments to be used for data collection. The researcher is a citizen of Tunisia who had a great freedom to do an academic research at the host university without being questioned by the authorities, neither had to answer some police questions before getting into the campus. This would not be possible prior to January 14th, 2011.

Limitations of the Study

Given the sample size and the current post revolution situation of the country now, care should be taken to try and generalize results to all EFL learners worldwide. It is safe to generalize findings about the situation of technology in public higher Ed system in Tunisia, and about the situation of English language learning in the Tunisian public Higher Ed system only. As a matter of fact, the number of private colleges and universities is on the rise in Tunisia. Private institutions are well known for standing
away from the norm established by public higher Ed institutions. Thus, the situation and the nature of students enrolled in universities can be different which suggest different type of findings to a great extent due to different environmental learning infrastructure.

Case study approaches have by default loose design methods that provide a margin of freedom for the researcher to make decisions. Yet, this does not make case study approaches as less important than other approaches like experimental design. Last, the bias of the researcher is a main motif to do this research on Tunisia and not in other countries. However, this bias was controlled by following clear scientific framework, using reliable instruments, and by following the directions of a diverse and knowledgeable thesis committee members at the researcher’s institution.

Important to note that students’ participants are not used to be observed or be part of a research study. According to the Hawthorne effect, participants or subjects improve or modify an aspect of their behavior being experimentally measured. This effect occurs simply in response to the fact that participants know they are being studied, not in response to any particular experimental manipulation. Last, the fact that the same teacher taught the two groups and has an announced bias toward technology can add a possible limitation to this research.

**Organization of the Thesis**

After this introductory chapter that provides an overview of the problem and research conducted, the following chapters will deal with literature review, (chapter two), the research design (chapter three), the findings (chapter four) and the conclusion and summary (chapter five). Also included are references of the cited works as well as all the data forms and tools attached in the appendices.
Chapter Two: Literature Review

Introduction

This section covers the theoretical framework and the rationale of this study as well as the main findings of research based articles that investigated the effects of information technology on English as a Foreign Language (EFL) learners, in relation to English language teaching methods and research in applied linguistics. The sources come from various countries where English is offered as a second language in higher educational environments. These environments are similar to the Tunisian context since they share the same value of teaching EFL. A lack of research pertaining to Tunisia exists, which is explained in the previous chapter, and this deficiency is the catalyst for conducting the current research. Some research stated the possible usage of information technology (IT) in EFL classrooms while others focused on certain areas of effect that fall under motivation and academic performance, which are the same variable that are investigated in this thesis research work. This section also includes literature related to the Tunisian higher education system to serve as background information for the educational environment serving as the scope of this study.

Theoretical Framework and Rationale

The Clark-Kozma debate.

Since the main IT resources used in the university under the scope of the study are basically educational media, the Robert B. Kozma theory and his debate with Richard Clark is the main theoretical lens that drives this research and the bias of the researcher.

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4 The Clark-Kozma debate that started at the 1993 international convention of The European Association for Research on Learning and instruction, Aix en Provence, France, on September 4, 1993
The Clark-Kozma debate can give a deeper knowledge about the issue of technology media effect on learning in relation with the teaching method and the instructional design strategy.

Kozma (1994) argues that does affect learning and technology can replace traditional tools that make learning, motivation and cognition better. However, Clark (1993) argues that media does not affect learning by challenging all researchers in the field, as well as Kozma, to provide a proof of learning that takes place with the use of a technology based media that could not be done merely using a traditional tool. Clark argues that “When a study demonstrates that media attributes are sufficient to cause learning, the study has failed to control for instructional method and is therefore confounded” (p. 4). Clark’s main point of argument is what he calls the ‘replaceability test’; “if a treatment can be replaced by another treatment with similar results, the cause of the results is in some shared (and uncontrolled) properties of both treatments” (p. 2). Thus, if a technology media based tool can be replaced with a traditional tool (not technology based) that can lead to the same result, it is accurate to conclude that the technology media has no effect on learning. An analogy provided describes a grocery vehicle that transports food, yet a grocery vehicle has no effect on the nutrition of consumers. Clark states that “Delivery technologies influence the cost and access of instruction and information. Design technologies make it possible to influence student achievement” (p. 2). He also notes that there is a long history of confusion between technology and instructional design. The claim that Clark refutes is based on an experimental study. This study concluded the ability of students to learn how to fly an
airplane using a computer simulator. Clark said that human beings were able to learn how to fly an airplane long before the invention of computer simulators.

In 1994, Kozma replied to Clark’s replaceability test arguing;

“The replaceability challenge does not advance our thinking about media, methods, or what causes learning. Indeed, the replaceability challenge says nothing at all about causes, and that is its principal failing. If two treatments yield a similar outcome it does not mean that they resulted from the same cause. And even if they happen to have a shared cause, a "replacement study" certainly does not identify what that cause is. It seems to me that if you want to know what causes learning, you have to look at it as it occurs. And if you do, I suspect you will find that learning is influenced by media and methods together, as they did in the study above.” (p. 13)

As a matter of fact, Kozma went to argue that it is difficult to apply the replaceability test when the instructional strategy is designed and built around the capabilities of a technology medium. Clark said that “we [Kozma et.al] could not have created this design [chemistry module to be taught using a computer software] without multimedia computing. If we change the medium, we would have to completely redesign our methods.” (p.13)

While both Kozma and Clark agree about the importance of teaching method and instructional design in relation to the medium used for instruction, they still disagree about the fact that there is a strong relation between cognition and technology media. Clark still argues that the replaceability test is a key point to consider before concluding enthusiastically about the effect of media on learning. However, Kozma reasons that a
careful consideration of cognitive processes allows researchers to find a critical connection between media attributes and learning. Thus, this research is aiming to investigate the effect of IT on advanced ELF students learning and motivation with attributing the findings to the teaching method, the medium and the attitudes and perceptions of the students and the teachers, as well as discussing the replaceability challenge in the context into consideration.

**The Chappelle’s call for continuous examination of educational technology.**

This research is also driven by the work of Chapelle (2003) along with Bruce and Hogan (1998) who argue that the strong relationship between technology and language learning should motivate all language professionals, mainly researchers, to stop and reflect how technology is changing the profession of English language teaching in particular, and applied linguistics as a whole (Chapelle, 2003). Given the fact that technologies are becoming embedded in the background and becoming invisible (Bruce and Hogan, 1998), determining how a researcher can reflect on an educational phenomenon (technology in this respect) that is increasingly invisible and almost untraceable is a challenge (Chapelle, 2003). A second problem emerges in this context; the accustomed usage of technology, that results in technology being taken for granted. Potential research is not conducted on tools and media that are not recognized as needing research. Nevertheless, technology affects education in English speaking countries even while becoming invisible and taken for granted (Chapelle, 2003).

According to Chapelle (2003) approaching technology questions in educational environments can be done through three lenses that each falls under a specific philosophical ideology. The three main philosophical approaches are; the technologist’s
perspective, the social pragmatist’s perspective and the critical analyst’s perspective. The technologist’s perspective is a futurist approach. This approach examines the existing technologies and the past patterns of change in order to come up with projections and predictions about inventions to come in the future. According to Brown and Duguid (2000, as cited in Chapelle, 2003) the social pragmatist’s perspective aims to revise the technologist’s predictions of the future with anecdotes of how the technological possibilities are against real experience in working with IT in business and in education. Last, the critical analyst perspective disagrees with the idea that the development and the use of technology forms the natural evolution of society. Instead, and unlike the futurist’s perspective, the critical analyst approach questions the underlying assumptions that technology is inevitable, positive, and culturally neutral (Chapelle, 2003, p.6).

To have a better understanding of the technology situation in EFL education, Chapelle (2003) argues that:

“[…] to be informed by the contributions of all three of the perspectives. All agree that technology is a force worthy of consideration, whether one wishes to focus on the technological potential, to examine pragmatic technology use, or to criticize both. But how can the three perspectives inform a new vision of the profession? The three positions need to be balanced to suggest implications for the profession […]” (p. 9).

The current study adopts the same vision that Chapelle (2003) suggested. Thus, the research design of this study used mixed method approach to collect data with giving a voice to the teacher as well as looking for attitudes and perceptions of the students toward IT since they are the main stakeholders in this respect.
Research/Evaluation

Information technology in education; general overview, opportunities and challenges.

According to Blazer (2008) during the last twenty years, technology changed society and changed many aspects of daily life. The advancement of technology led to a growing agreement among educators that it should have an integral role in education. (Culp et al., 2003; CEO Forum on Education and Technology, 2001; Fouts, 2000; Johnson, 2000). Schools around the world are steadily growing in their technology use since educators are engaged in an ongoing efforts to integrate technology into the curricula. In the United States for example, the percentage of schools with ubiquitous computers programs jumped from 4% in 2003 to 24% in 2006 and to 52% in 2011 (Blazer, 2008, p. 1).

Researchers in the field of educational technology (Ed Tech) have identified that Ed Tech is not restricted to computer use only. In fact, Ed Tech involves much equipment and various applications like videoconferencing, digital television, electronic whiteboards and digital cameras (Jackson, 2008; Education Week, 2007; McCampbell, 2002; Marshall, 2002 as cited in Blazer, 2008). Educators and researchers have struggled with making decisions in terms of the types of technology tools to use and how to use those tools (Culp et al., 2003). Ed Tech field experts agree that the right tool and the right approach is dependent on many variables. Indeed, Ed Tech usage should always match learning and teaching goals as well as become appropriate for the students who are using these Ed Tech tools (Sivin-Kachala & Bialo, 2000 as cited in Blazer, 2008).
Despite ongoing debates that are present in the field, many experts in Ed Tech have suggested that technology is able to enhance learning by providing students with various opportunities. As cited in Blazer (2008), Honey et al., (2005); Gahala, (2001); Fouts, (2000); Johnston, (2000) and Means, (2000), argue that various technology can play a different role in students’ learning. According to these experts, word processing applications and e-mail can improve communication skills, for example. The databases and spreadsheet software can enhance organizational and analytical skills of the students. Also, modeling software often improves comprehension of math and science abstract concepts. Thus, students should be afforded opportunities to acquire the technological skills they will need for future employment.

Yet, critics have always been present in Ed Tech research. Many critics listed various reasons why technology should not be emphasized in schools. Experts in the field such as; Dunleavy et al., 2007; Valdez, 2005; Jackson, 2004; Cooley, 2001; Northwest Regional Educational Laboratory, 2001; Wright, 2001; Blumenfeld et al., 2000; Weiner, 2000; and Oppenheimer, 1997, argue that some educators have endorsed technology randomly as if the use of computers will automatically produce a good quality teaching and learning experiences, as cited in Blazer (2008). Also, the former group of experts, as cited in Blazer (2008), argue that since the technology usage in schools is typically associated with a high cost, the repercussions of spending budget dollars on technology can have a negative impact on other important educational programs (art, music, sports, and field trips). Technology cost is not only related to the implementation cost. The ongoing costs related to support, equipment updates, upgrade and repair can create
financial difficulties for many schools, which can result in a technology gap between schools that can afford technologies and those that cannot.

In addition to significant costs, Blazer (2008) cites the same group of experts mentioned earlier as finding that the technological innovations often have been proven unusable because schools lack the capacity to link equipment use with instructional objectives. The use of technology mandates that teachers should have strong classroom management skills. Those skills are necessary to carefully monitor students’ use of tools, to provide directions, complicated procedures instruction and explanations. The authors cited earlier agree that computers can reduce students’ opportunities for socialization. In addition, some teachers use computers for example to entertain students with irrelevant learning activities that lead to distraction and not effective use. The latter group of authors also stated that resistance from teachers is another challenge for Ed Tech integration. Last, they mention how many schools in the U.S. decided to abort their 1:1 laptop program, like Syracuse and Virginia school districts, due to various reasons (Blazer, 2008, p. 3).

**Integration of information technology in EFL classes.**

Zamorshchikova, Egorova, and Popova (2011) state that uses of IT in EFL classes can be implemented in various ways, including and not restricted to; administrative purposes (timetables, lesson planning and courses configuration), assessment of the student’s knowledge of the language (online test and quizzes) and as a teaching aid (lecture facilitator, lab monitor). The authors provided their own uses of IT as well as the learning implications. The example under investigation given by Zamorshchikova et al. (2011) was based on the integration of online learning and developing educational
resources (such as Moodle learning management system and wiki projects) based on Web 2.0 social networking technologies. The project was an internet based EFL course that offered materials through digital storyline in cooperation between Yakutsk State University in Russia and the University of Tromsø in Norway.

Many other methods and strategies describing IT integration are available in the literature. Yonally and Gilfert (1995) argue that using online chatting rooms and software can be a great deal of help to EFL learners for both in and out of classroom instructional activities. More recently, De Izquierdo and Reyes (2009) noted that blogging is an effective tool in EFL classes that can be used for writing and reading programs. Ilter (2009) found that IT can be used by students to present their projects, papers and do classroom oral presentations for assessment purposes. From an instructional point of view, Ilter (2009) explained that videos are an empowering tools for language instruction that relies on authentic materials. Huang and Hung (2010) argue that computers and online modules can be used to create electronic speaking portfolios for EFL learners. These E-portfolios can be used to track student language skills’ progress and to decentralize access to learning materials. Wang, Lefaiver, Wang, & Hunt (2011) developed a Virtual 3D (aka Second Life) game between EFL students in three countries; China, the U.S. and Georgia. This game was part of the curriculum since it includes listening, reading and speaking activities.

According to Chapelle (2003) integrating videos into EFL lessons will add an authentic dimension to the learning materials and to the assessment process as well. In fact, “a listening test delivered by computer can use video or images in the input to examinees, and therefore increase the authenticity of the input relative to situations in
which visual information is part of the input” (p. 28). Borrás & Lafayette (1994) stated that “when learning from ’authentic video’ in a multimedia environment, having the opportunity to see and control subtitles, as opposed to not having that opportunity, results in both better comprehension and subsequent better use of the foreign language” (As cited in Chapelle, 2003, p. 82).

The immersion of language learning is expected to help develop language ability. Language learning immersion is derived from Krashen’s input hypothesis (1982) where he argues about the value of comprehensible input. Comprehensible input occurs when a language is comprehended without the learner knowing all of the linguistic forms in the message (Chapelle, 2003). With the impressive range of the material in English on the Internet, “any EFL learner can find sufficient comprehensible input for a kind of virtual immersion” (Chapelle, 2003, p. 53). Chapelle (2003) also notes that data from previous experiences with the immersion principle show that EFL learners who are exposed to the target language might improve their ability to comprehend, particularly the spoken language part of English.

**The quest of motivation and performance.**

Zamorshchikova et al. (2011) argue that E-learning provides unlimited opportunities for collaboration in international and cross-cultural projects in learning EFL. Social network services are increasingly important in the learning process as its popularity rises among the younger generation. De Izquierdo et al. (2009) found that the use of blogs allows creating an environment whereby students would interact in a socio-cultural manner and actively practice EFL beyond the traditional classroom. Additionally, De Izquierdo et al.’s (2009) research revealed how blogs can be very helpful for EFL
students in sharing what they are learning and in helping each other. Thus, students become more independent in their learning using social networking tools. The aspect of independent learning is a core value in Vygotsky’s constructivism approach (Cakir, 2008) which serves as a key foundation for English Language Teaching (ELT) methodologies. Blogging in this case found to be an effective tool in the creation of environments to motivate students’ learning beyond the classroom. Learning and therefore applying what had been learned in the class in the real life is a part of the role of Ed Tech in the 21st Century educational standards. De Izquierdo et al. (2009) concluded that it is a responsibility for EFL teachers who should, as a part of their educational mission, “prepare the students to think critically, take social responsibility, analyze problems and provide possible solutions to them” (p. 115). Ilter (2009) concluded her findings by noting that the use of technology in EFL classrooms is a source of meaningful and interesting process in language learning.

Learning a foreign language is a complex process and learners need motivation and encouragement. Students are more motivated to learn and to participate in the learning activities when IT tools are used in class. Wang et al. (2009) found that the online virtual 3D world games motivated EFL students to do more online activities that increased their interaction with native speakers and thus, their language skills by being exposed to native sources of language. Özd and Kutoglu (2004) found that EFL students always express satisfaction about their presentations when they use technology. In fact, using technology make students feel confident and that their audiences are engaged in following their work. Dogan and Tanriverdib (2001) claimed that watching a movie clip helps EFL students to develop their own vocabulary knowledge regardless the caption
presence. Huang and Hung (2010) found that E-Portfolios draw students’ attention to the weaker areas in their speaking, offer additional opportunities for oral practices, and allay speaking anxiety. Additionally, they concluded by explaining how the absence of face-to-face interaction throws a shadow on e-portfolio’s utility as well as how rehearsal opportunities mask the student’s true oral proficiency level.

**Challenges of information technology integration in EFL classes.**

The challenges of Ed Tech integration mentioned in the previous chapter apply to EFL classes as well because they affect schooling and learning in general. Additionally, some specific challenges of IT integration in EFL classes do exist. As written earlier, new practices and solutions always solve problems but also suggest new types of issues. For example, hybrid EFL classes offer mixed instructional methods where two distinct classroom communities are created with EFL students unknowingly participating in the debates that surround them (Harrington, 2010). Due to the inability to meet face to face and attend the class in the traditional way, the absence of a social component in online learning creates a crevasse in this respect. Harrington (2010) argues that EFL students enrolled in hybrid classes have to be exposed to new discourses and conventions, which will lead them to represent themselves in new ways each time they step into a new class. Therefore, a hybrid class provides a continuous change of delivery models and places, which helps shift the focus of EFL students to help them learn how to shift between contexts rather than focusing on learning the discourses. Harrington’s (2010) conclusions reveal that EFL students will have a redundant and unnecessary learning that will negatively affect their language learning development. Another issue investigated by Harrington (2010) is individualism. The author suggests that the face-to-face instruction
of hybrid writing classes is problematic for EFL students. Many of these students belong to different cultures, which are more group life style oriented, feel uncomfortable in situations of forced individualism. Muting is also another issue investigated by Harrington. Indeed, this issue is an outcome of the previous stated problems.

According to Chen (2007) making good use of the IT in EFL classes requires teachers needing different kinds of expertise, knowledge, and skills than those required in the past. Teacher training is important to realize benefits from IT. In Chen’s study, she found that teachers who obtained a technology-related degree in the US have learned and gained beneficial IT skills. Whereas the teachers who hold local degrees from Taiwan, they took courses in such fields either during training or exchange in the US or in Taiwan, but do not have such skills as the former group. Chen (2007) argues that teachers with local degree in Taiwan are not tech savvy compared to the teachers who were trained in the US. The US degree holders/teachers group feels much more comfortable locating resources and learning how to use IT compared with other EFL local teachers. This phenomenon is a degree/type of digital divide. Issues and barriers in internet-integration instruction found in this study are: time, feelings of uncertainty, inadequate institutional support and workshops focused on technology application in language teaching, and lack of planning for technology integration into classroom.

The Tunisian higher educational system.

Education in Tunisia has rapidly developed after the country gained independence in 1956 from France. Before 1958, like in many other countries, only the privileged rich minority enjoyed the benefit of education in Tunisia. Today, education is one of the main concerns of the government as well as the society at large. In 1991, it became
compulsory that all children from both genders, aging from 6 to 16 years old, must attend basic education training with no segregation based on gender, unlike many other Arab-Muslims countries where schools and classes are divided based on the gender. Currently, there are about 239 higher educational institutions in Tunisia including private and public.

According to Daoud (1996) “in 1994-1995, the gradual implementation of a ‘new maitrise’ (Bachelor of Arts program) began in the departments of English in Tunisia as part of a standardization procedure of all degrees in this category in the language arts and human science disciplines” (p. 602). With maintaining the old division of content in those degrees mainly literature, civilization, and linguistics, this program was promising in two respects. Daoud (1996) argues that “first, it sets minimum standards for a more homogeneous preparation of students in the various faculties” [and] “second, it includes an applied linguistics component as pre-service teacher training, with courses in TEFL methodology, curriculum development, and language testing “(p. 603).

In 2006, the government introduced a new system called LMD, which stands for License (Bachelor) Mastere (Master’s), Doctorate (Ph.D.) with a specific time completion guidelines; 3 years for Bachelor, 2 years for Masters and 3 years for Ph.D. The LMD regulations came with the credit hours system and switched the 4 years programs to compressed 3 years of study programs. This system was faced with a great opposition form teachers and many stakeholders. Now after the revolution of January 14th 2011, serious thoughts from teachers and scholars at universities as well as politicians are demanding revision or abolishment for this system.
Summary

The integration of technology and IT resources in specific into EFL learning has a long history. As technology evolves, new strategies, methods, and resources that can fulfill the requirements of language learning emerge as well. Learning language is enhanced when using technology. From simple operations of computers, to Web 2.0 apps and 3D online gaming in virtual world environments, EFL learners and teachers are finding a variety of ways to use IT for learning English. A common theme in the research is the quest of motivation. Since learning a new language is a complex process by definition, motivating students to learn is a key focus of the modern ELT approaches. In the cited works, IT was demonstrated to help motivating EFL learners in completing their learning tasks. Yet, as new solutions and practices emerge, many issues and new problems arise. The issue of identity, technology skill, readiness and attitudes, and digital divide starts to be a common theme among the critics of Ed Tech, once EFL classes started to be more IT based.

Conclusion

The review of the literature included significant research data that serves as a foundation for this study to demonstrate the value of investigating IT effect on EFL students as well to showcase the presence of IT in those classes. Additionally, the resources explored did not provide any research being done on Tunisian EFL students. Yet, the characteristics of the environments where most of literature is drown from are similar to the Tunisian context. All studies state examples of how IT is being used as well as the implications. Each one used a different instrument to measure the effect.
Chapter Three: Research Design

Introduction

This chapter pertains to aspects of the research design. Sections of this chapter include detailed description of the participants and the instruments of data collection. Also, the procedure of the data collection as well as the dates and the methods of analysis are included in this chapter.

The study is based on a mixed method case study approach that investigates the effect of information technology on EFL Tunisian college students. The variables measured/investigated include: attitudes and perceptions, effect on motivation, interest, and on academic performance. This study is guided by the following research questions: (A) What are the attitudes and perceptions of Tunisian college students toward information technology? (B) What are the effect of information technology on college students? (C) How are information technologies integrated in higher education classes in Tunisia?

Research Design

The research design of this study is based on Yin’s (1989) framework for case study research. According to Yin (1989), a case study is as an empirical inquiry that “investigates a contemporary phenomenon within its real-life context and addresses a situation in which the boundaries between phenomenon and context are not clearly evident” (p. 330). This study perfectly falls under Yin’s case study framework since it investigates the current question of technology in the 21st century (contemporary phenomenon) in the Tunisian public higher Ed system (real-life context). Case studies are appropriate when they illuminate a decision or set of decisions. The focus of case studies
can be on; institutions, processes, programs, neighborhoods, events, or organizations. This second criterion of Yin’s case study approach is met in this research since the findings can enlighten decision makers in Tunisia in planning and implementing reforms. The case study approach typically combines data collection methods such as archives, interviews, questionnaires, and observations (Yin 1989). This triangulated methodology provides stronger substantiation of constructs and hypotheses, which is followed in the research design of this study.

This research investigates the situation of information technology in Tunisian higher educational system and the effect(s) of IT on EFL college students. The variables measured /investigated include: attitudes and perceptions, effect on motivation, interest, and on academic performance. The research questions are;

(A) What are the attitudes and perceptions of Tunisian college students toward information technology?

(B) What are the effect of information technology on college students?

(C) How are information technologies integrated in higher education classes in Tunisia?

**Population Sampling**

Participants in this study are non-random convenience sample that consists of 36 students enrolled in two groups (group A and B; A=21, B=15. N total=36). Appendix (B) contains the human research review permission information. Participants’ ages range approximately from 22 to 28 years old. Participants are Tunisian English language college students (majoring in English language literature and civilization at a Tunisian major south university). They are seniors or 3rd year students according to the student progress system in Tunisia. As a part of the applied linguistics subject module for the fall
semester, participants are enrolled in a weekly two hours class titled, “TEFL, Teaching English as a foreign language.” In this class participants learn about ELT methods in preparation of teaching English. The course objectives of this class include: prepare students for teaching English in different educational environments, learn and analyze the different English language teaching methods, and approaches and to prepare students to think critically about the profession of teaching English in relation to the educational environments’ opportunities and restrictions.  

The selection of senior level participants was meant to ensure a high level of maturity in responding to the survey questions in an honest way, without being worried about expressing personal opinions or being worried about the level of language complexity of the survey items. The university where the study was conducted enrolls about seven thousands students with a great diversity of backgrounds among the participants. Important to the study was selecting an approachable cooperating professor who was willing to open classes for the data collection.

**Instrumentation and Data Collection**

Participants were asked to take a survey called Attitudes and Perceptions Toward Information Technology, adopted from Teacher Attitudes Toward Information Technology, TAT V3.2 Survey Questionnaire (see Appendix A&B) from the Texas Center for Educational Technology at the University of North Texas, by Knezek and Christensen, (1998). In this survey, participants answered questions about their attitudes and perceptions toward IT as well as shared some information about the technology culture of where they live, and their skills in dealing with IT. Also, after two weeks of

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5 Retrieved from the course syllabus provided by the instructor
taking the first survey, participants took another survey called Course Interests Survey, (CIS) (see Appendix B) by Keller, 2010, based on the ARCS [Attention Relevance, Confidence and Satisfaction] model, where they rate their level of interest in the subject being taught by an instructor who always uses IT for instructional activities in the class.

Due to the inability to control many variables and conditions, the main focus of this research is not on the experiment. Indeed, well-established future experimental research is needed to investigate many variables related to technology and education in Tunisia. In week 10 of the fall semester in 2012, a limited designed experiment took place without randomizing the participants. One randomly selected group was taught a lesson where the instructor used varied IT tools such as videos and PowerPoint slides. Another group was taught by the same instructor without using IT resources. Lesson goals and objectives were identical between both groups, whereas the medium was different; a technology (IT) based medium in a group and a traditional media consists of the textbook in the other group. It is necessary to mention that the group that was taught without IT is an experimental group, because the intervention consisted of taking off all the usual IT tools that supposed to be used for teaching and learning purposes.

Participants in both groups were administered a pretest and a posttest to measure growth from the sessions then an unpaired T-test analysis of both groups’ scores was conducted to investigate potential group differences.

At the end of the class period of the “experiment” day, both groups took another survey called Instructional Material Motivation Survey (IMMS) by Keller, 2010, (see Appendix A&B) based on the ARCS model, where they were asked to rate their
motivation level toward the materials being used for classroom instruction based on the ARCS model variables.

The other sources of data were observations of the two class periods and an interview with the teacher (see Appendix A&B). The collected data were analyzed according to the instructions and formulas that were accompanied to the instruments. The instruments are well tested and have a high rate of reliability. Permission to use them was granted by the creator of the instruments themselves. Excel and SPSS software were used to analyze the numerical data.

**Students’ attitudes toward Information technology survey.**

The Survey of Students Attitudes Toward Information Technology was adapted from the Survey of Teachers' Attitudes Toward Information Technology Questionnaire (TAT v.3.2a) from the Texas Center for Educational Technology at the University of North Texas, by Knezek and Christensen, 1998. In this survey, participants answered questions about their attitudes and perceptions toward IT and participants were able to share information about the technology culture of where they live, and their skills in dealing with IT. This survey was conducted anonymously. According to Knezek and Christensen, 1998, TAT gathers data on 15 separate indices from respondents. Ten of the fifteen items are well-validated subscales from the Survey of Teachers' Attitudes Toward Computers (TAC) Questionnaire (Christensen and Knezek, 1996, 1997), which includes Kay's semantic perception of computers (Kay, 1993) and D'Souza's (1992) classroom learning via Email.
ARCS instruments.

Attention, Relevance, Confidence and Satisfaction (ARCS) is a problem solving approach to designing the motivational aspects of learning environments to stimulate and sustain students’ motivation to learn, and it was developed and revised by Keller in 1983 - 1987. There are two major components in this model. The first is a set of categories representing the components of motivation. These categories are the result of a synthesis of the research on human motivation. The second part of the model is a systematic design process that assists in creating motivational enhancements that are appropriate for a given set of learners (Keller, 2010). The synthesis allows educators to identify the various elements of student motivation, and the design process helps to profile the motivational characteristics of students in a given learning environment and then design motivational tactics that are appropriate for them.

According to Keller (2010) the model has been used and validated by teachers and trainers in elementary and secondary schools, colleges, and universities, and in adult learning settings in corporations, government agencies, nonprofit organizations, and military organizations. In essence, the tool has been validated in virtually every setting in which there is a requirement for people to learn. It has also been used around the world on virtually every continent, and has been used extensively in Asia, Europe, and Latin America. Numerous research reports verify its validity and usefulness, such as Brophy (1981), Wlodkowski (1984, 1999) and Shellnut, Knowlton, & Savage (1999).

Course interest survey (CIS).

The Course Interest Survey is a 34 item survey using the four ARCS categories. The participants were handed the survey in the 3rd week of the fall 2012 semester where
they were asked to rate their interest in the subject being taught, in the curriculum and in
the class experience as a whole anonymously. Investigating the interest of the participants
in the subject/class before investigating their motivation toward anything happens in the
classroom was important. The CIS is set up as a survey using a 5 point Likert-type scale
as follows: 1 (or A) = Not true, 2 (or B) = Slightly true, 3 (or C) = Moderately true, 4 (or
D) = Mostly true, 5 (or E) = Very true. A minimum score for a participant is 34 and a
maximum score is 170 with a mid-point of 102. According to Keller (2010), CIS was first
administered to a class of 45 university undergraduates, and the internal consistency
estimates were satisfactorily high but Keller continued to improve the instrument. The
standard version of the survey was then administered to 200 undergraduates and graduate
students in the School of Education at a university in the southeast. Information was also
analyzed pertaining to the students’ course grades and grade point averages.

The internal consistency estimates, based on Cronbach’s alpha, were satisfactory
with a total scale of 0.95 as demonstrated in Figure A.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Reliability Estimate (Cronbach’s α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention</td>
<td>0.64</td>
</tr>
<tr>
<td>Relevance</td>
<td>0.64</td>
</tr>
<tr>
<td>Confidence</td>
<td>0.61</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>0.88</td>
</tr>
<tr>
<td>Total scale</td>
<td>0.95</td>
</tr>
</tbody>
</table>

*Figure A: CIS Internal Consistency Estimates, Keller (2010)*

*Instructional material motivation survey (IMMS).*

The collected data from this survey can be analyzed to reveal the extent
participants are motivated to learn during a lesson. Additionally, results help justify how
participants react to the learning materials and answering the core question of this
research; what are the effect of IT on Tunisian EFL college students in terms of
motivation? The Instructional Material Motivation Survey (IMMS) is a 36 item survey used. The participants were handed this survey after the class session is completed to evaluate the instructional materials being used on that day vis a vis their motivation toward the lesson and the materials being used for classroom instruction anonymously. Since the survey is based on the ARCS model, the Relevance and Confidence subscales both have 9 items, the Satisfaction subscale has 6, and the Attention subscale has 12 items. According to Keller (2010), the primary reasons for the disproportionate numbers of items in the Attention and Satisfaction subscales are that boredom and lack of stimulation are such ubiquitous characteristics in instructional writing and the satisfaction category does not have as many points of connection to printed material as the others (See appendix B for copy of the survey). Like the CIS, the IMMS uses four subscales that can be used and scored independently. The IMMS also relies on a survey using a 5 point Likert-type scale as follows; 1 (or A) = Not true, 2 (or B) = Slightly true, 3 (or C) = Moderately true, 4 (or D) = Mostly true, 5 (or E) = Very true. A minimum score on the IMMS is 36 and a maximum score is 180 with a mid-point of 108.

The IMMS was administered to a total of 90 undergraduate participants in two undergraduate classes for pre-service teachers at a large southern university. The internal consistency estimates, based on Cronbach’s alpha, were satisfactory with total scale or 0.96 as Figure B shows (Keller, 2010, p. 285).

<table>
<thead>
<tr>
<th>Scale</th>
<th>Reliability Estimate (Cronbach α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention</td>
<td>.89</td>
</tr>
<tr>
<td>Relevance</td>
<td>.81</td>
</tr>
<tr>
<td>Confidence</td>
<td>.90</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>.92</td>
</tr>
<tr>
<td>Total scale</td>
<td>.96</td>
</tr>
</tbody>
</table>

*Figure B: IMMS Consistency Estimates, Keller (2010)*
**Pre and post test.**

Participants in both groups took a pretest composed of 10 items. The items pertained to basic knowledge of being covered in the lesson on the day of the experiment. Three of the ten items addressed previous lessons and matters that all participants should have learned. The rest of the items addressed content that had yet to be taught in the current class. The control and experimental groups both took the same pre-test.

At the end of the session, participants in both groups took a posttest which was based on the pre-test. The change introduced to the posttest was accomplished through changing the wording and the order without changing the level of the difficulty. The pre- and post-tests were conducted to measure performance differences after completing the lesson. Scores were analyzed using an unpaired T-test analysis.

**Observation of the class.**

During the “experiment: day, the researcher attended the two sessions to hand the surveys and to collect them back from the participants. While the instructor was in action, the researcher took a corner in the room and took notes about all the steps that the instructor followed, the topics of discussions, the general mood and the atmosphere of the class. Taking notes did not follow any protocol. The researcher took descriptive notes and photos to bring an authentic snapshots of what can be a typical class period at a Tunisian public university

**Interview with the Instructor.**

The researcher conducted an interview with the teacher of the class asking general questions. The interview focused on his experience in teaching, his attitudes and perceptions toward IT and Ed Tech in general by using similar questions to the survey
given to students. Giving a voice to the teacher was crucial to have a better overview picture on the situation of his class and thus IT at the university under investigation.

**Data Analysis**

After collecting the data, all the responses were transferred from paper documents into a digital format using Excel spreadsheets. The data were imported into an SPSS worksheets where the various analyses were run to generate reports and to calculate significance of the obtained differences. The researcher’s university statistical department provided assistance in running the analysis and gave a valuable advice about the interpretations of the results.

The analysis of the data looked first at the attitudes of the perceptions toward IT generated from the Attitudes and Perceptions Toward IT survey. Descriptive statistical tables were generated. For this part of data analysis, a decision was made to look at the whole body of participants without splitting them into two groups. Yet, a possible analysis could be run to see the differences between the two groups since data were collected and stored separately at the initial stage. Then, the analysis tackled the interest of the participants into the subject through the generated data by the Course Interest Survey. The researcher found it preferable to also look at the whole body of participants without splitting them into two groups despite that an analysis based on the two groups could be done similar to the first survey. Thirdly, the analysis looked at the pre- and posttest scores to determine differences between the two groups in terms of performance by comparing the scores obtained in both tests. The analysis was conducted using an unpaired T-test. Finally, analyzing the data generated by the IMMS survey provided data
to explore the motivation levels of the participants based on their groups, which is the
essence of the difference between the “control” and “experimental” group.

**Summary**

Choosing to do a mixed method case study design was necessary for this type of research to obtain authentic data and valid conclusions. The design is complex given the number of instruments and the time allocated to conduct data collection. Yet, using validated and reliable instruments and securing good collaboration made the process less complex. Relying on more than one instrument ensures the triangulation of the design, which helps to remove potential bias of the researcher. Triangulation also enables a more detailed and valid explanation of the data. The wealth of data and resources employed can also ensure a more complete and confident justification of the findings in this study.
Chapter Four: Results

Introduction and Context

This chapter covers the findings of the study. Data reports and interpretations were drawn from the surveys described in chapter three. The reports of the findings are organized by the surveys, then, by research questions based on the analysis of the data. Given the multiplicity of data collection tools and the large number of items in each survey, the findings of this study are quite extended. Thus an effective organization in reporting and summarizing is necessary. In collaboration with a statistics consulting center at the researcher’s university, analyzing the data and reporting them in organized tables was a crucial part of this research.

Findings of Students Attitudes Toward Information Technology Survey

Data gathered from this survey reveal that participants in both groups generally share positive attitudes toward information technology. The first part of the survey pertained to general questions to study the technology culture of the participants. About 80% of the participants have access to computers at home while only 11% use laptops in class. 70% of the participants reported that they have access to the internet at home but none reported that s/he has access to internet at the university, despite the fact that 4G networks in Tunisia are available at reasonable prices. Having no wireless access to the internet at the university campus is the main reason behind this web access lack (see table 1).
<table>
<thead>
<tr>
<th>Statements</th>
<th>% Percentage</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>77.8</td>
<td>22.2</td>
</tr>
<tr>
<td>Access to computer at home</td>
<td>Access to computer at class</td>
<td>11.1</td>
</tr>
<tr>
<td>Access to the web at home</td>
<td>Access to the web at class</td>
<td>72.2</td>
</tr>
</tbody>
</table>

**Table 1: Technology Culture Questions**

In response to questions about their experience with using computers, about 60% of the participants reported that they use computers at home for learning purposes and that 44.4% use computers daily, 22.2% use computers weekly, and 33.3% use computers occasionally. The vast majority of the participants reported that they did not have a formal computer/IT training, thus, most participants acquired technology skill through their own efforts (table 2, 3, 4 and 5).

<table>
<thead>
<tr>
<th>Experience with Computer and Skill</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Apps: Word, Excel etc…</td>
<td>3</td>
<td>8.3%</td>
</tr>
<tr>
<td>Use Computers for learning at Class</td>
<td>4</td>
<td>11.1%</td>
</tr>
<tr>
<td>Use Computers for learning at Home</td>
<td>21</td>
<td>58.3%</td>
</tr>
<tr>
<td>Use Apps and Use PC for learning at Home</td>
<td>6</td>
<td>16.7%</td>
</tr>
<tr>
<td>Use Computers for learning at home and in Class</td>
<td>1</td>
<td>2.8%</td>
</tr>
<tr>
<td>Use Apps, Use Computers for learning at Class, and at Home</td>
<td>1</td>
<td>2.8%</td>
</tr>
</tbody>
</table>

**Table 2: Experience with Computer and Skill**
<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily</td>
<td>16%</td>
</tr>
<tr>
<td>Weekly</td>
<td>8%</td>
</tr>
<tr>
<td>Occasionally</td>
<td>12%</td>
</tr>
</tbody>
</table>

*Table 3: Computer Use Frequency*

<table>
<thead>
<tr>
<th>Type of Training</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Training</td>
<td>10%</td>
</tr>
<tr>
<td>Basic Computer Literacy</td>
<td>6%</td>
</tr>
<tr>
<td>Computer Applications</td>
<td>8%</td>
</tr>
<tr>
<td>Computer Integration</td>
<td>7%</td>
</tr>
<tr>
<td>No Training or Basic</td>
<td>3%</td>
</tr>
<tr>
<td>Computer Apps and Integration</td>
<td>1%</td>
</tr>
<tr>
<td>Basic Computer App and Integration</td>
<td>1%</td>
</tr>
</tbody>
</table>

*Table 4: Type of Computer Training*
<table>
<thead>
<tr>
<th>Place of Computer Training</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>1</td>
<td>2.8%</td>
</tr>
<tr>
<td>Self-Taught</td>
<td>11</td>
<td>30.6%</td>
</tr>
<tr>
<td>School</td>
<td>5</td>
<td>13.9%</td>
</tr>
<tr>
<td>College/University</td>
<td>4</td>
<td>11.1%</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>8.3%</td>
</tr>
<tr>
<td>Self-Taught and School</td>
<td>5</td>
<td>13.9%</td>
</tr>
<tr>
<td>Self-Taught and at University</td>
<td>1</td>
<td>2.8%</td>
</tr>
<tr>
<td>School and University</td>
<td>6</td>
<td>16.7%</td>
</tr>
</tbody>
</table>

*Table 5: Place of Computer Training*

Also, the survey revealed that the participants have the following positive attitudes and perceptions toward information technology and computers in specific as table 6 shows.

<table>
<thead>
<tr>
<th>Statements</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Undecided</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I enjoy using computers</td>
<td>0</td>
<td>16.7</td>
<td>11.1</td>
<td>44.4</td>
<td>27.8</td>
</tr>
<tr>
<td>I'm tired of using</td>
<td>11.1</td>
<td>47.2</td>
<td>13.9</td>
<td>25</td>
<td>2.8</td>
</tr>
<tr>
<td>computers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>I get good grades using the computers</td>
<td>5.6</td>
<td>19.4</td>
<td>16.7</td>
<td>41.7</td>
<td>16.7</td>
</tr>
<tr>
<td>I concentrate when using computers</td>
<td>0</td>
<td>11.1</td>
<td>8.3</td>
<td>69.4</td>
<td>11.1</td>
</tr>
<tr>
<td>I enjoy computer games</td>
<td>13.9</td>
<td>22.2</td>
<td>16.7</td>
<td>36.1</td>
<td>11.1</td>
</tr>
<tr>
<td>I study hard with computers</td>
<td>11.1</td>
<td>27.8</td>
<td>11.1</td>
<td>47.2</td>
<td>2.8</td>
</tr>
<tr>
<td>Take longer time to finish work using the computer</td>
<td>5.6</td>
<td>30.6</td>
<td>5.6</td>
<td>47.2</td>
<td>11.1</td>
</tr>
<tr>
<td>Learn more using computers</td>
<td>0</td>
<td>2.8</td>
<td>0</td>
<td>69.4</td>
<td>27.8</td>
</tr>
<tr>
<td>Enjoy lessons on the computer</td>
<td>0</td>
<td>25</td>
<td>11.1</td>
<td>50</td>
<td>13.9</td>
</tr>
<tr>
<td>Important to learn using computers</td>
<td>0</td>
<td>5.6</td>
<td>41.7</td>
<td>0</td>
<td>52.8</td>
</tr>
<tr>
<td>Computers are easy to use</td>
<td>2.8</td>
<td>27.8</td>
<td>11.1</td>
<td>36.1</td>
<td>22.2</td>
</tr>
<tr>
<td>I feel comfortable studying with computers</td>
<td>2.8</td>
<td>13.9</td>
<td>19.4</td>
<td>58.3</td>
<td>5.6</td>
</tr>
<tr>
<td></td>
<td>13.9</td>
<td>36.1</td>
<td>30.6</td>
<td>19.4</td>
<td>0</td>
</tr>
<tr>
<td>---------------------------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>----</td>
</tr>
<tr>
<td>Get sinking feeling when using the computer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I get nervous while working with computers</td>
<td>33.3</td>
<td>44.4</td>
<td>2.8</td>
<td>11.1</td>
<td>8.3</td>
</tr>
<tr>
<td>I get frustrated while working with computers</td>
<td>33</td>
<td>47.2</td>
<td>5.6</td>
<td>13.9</td>
<td>0</td>
</tr>
<tr>
<td>I study little with computers</td>
<td>11.1</td>
<td>25</td>
<td>22.2</td>
<td>38.9</td>
<td>2.8</td>
</tr>
<tr>
<td>Computers are difficult to use</td>
<td>24.9</td>
<td>55.6</td>
<td>2.8</td>
<td>13.9</td>
<td>2.8</td>
</tr>
<tr>
<td>I learn from books more than computers</td>
<td>11.1</td>
<td>33.3</td>
<td>16.7</td>
<td>25</td>
<td>13.9</td>
</tr>
</tbody>
</table>

Table 6: Attitudes Toward IT

Findings of the Course Interest Survey (CIS ARCS Model)

Participants from both groups reported generally high scores on the Course Interest Survey. That being said, participants show a high interest in the subject. At an initial stage, a comparison between the two groups’ scores was conducted. The comparison revealed that both groups have the same level. This comparison revealed a slight difference between the two groups’ score that is calculated as non-significant.
Thus, it will be better in this case to report the findings of this survey by looking at the whole group of participants (N=36) as table 7 and 8 show:

<table>
<thead>
<tr>
<th>CIS Score</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>36</td>
<td>118.78</td>
<td>16.846</td>
<td>2.808</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>One-Sample Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Value = 0</td>
</tr>
<tr>
<td>t</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

*Table 7: CIS Score and Sample Test Analysis*

<table>
<thead>
<tr>
<th>ARCS Scores out of 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Attention</td>
</tr>
<tr>
<td>Relevance</td>
</tr>
<tr>
<td>Confidence</td>
</tr>
<tr>
<td>Satisfaction</td>
</tr>
</tbody>
</table>

*Table 8: ARCS CIS Scores*
The Experiment Day

The Technology group.

The technology group or (GR Tech as labeled in the tables) includes 21 participants (19 Female, 2 Males). The lesson of the day was about different EFL methods and approaches. As stated in the lesson plan of the teacher, the lesson objectives were (1) to identify different teaching methods of EFL and their different distinctive features, (2) to diagnose their strengths & weaknesses, and (3) to set up the parameters for the best choice in a teaching situation.

The class started at 8:30 AM. The teacher started by greeting everyone in an informal way. Housekeeping issues were discussed about the exam (e.g., Noting when it will take place and when students will have a make-up session and other similar concerns). This discussion reflects the kind of democratic learning that was absent before the revolution of January the 14th 2011. Participants were handed the pre-quiz while the teacher was taking care of setting up the projector and the laptop. There was no technician in the room to handle the setup. As a matter of fact, as the teacher claimed, using technology at that university requires complete independence of the teacher to set up everything needed. The room has four windows. It was a sunny bright day, which raised the researcher’s concern about the brightness of the projector, and to what extent the participants will be able to see the projected materials clearly. Participants were told that the quiz is not a graded test and there is nothing that will be included in their grade. Thus, there is no need to put their names on the papers.

The teacher started the lesson by recapping the last session in order to establish a link to the new lesson of the day. The recap was in form of a class discussion were
participants talk freely and answer the questions of the teacher. The questions were meant to stimulate participants thinking and their working memory so that they retrieve the information of what they got from the last session. The teacher was not sitting on a chair by his desk; he moved in the room, was close to the participants and spoke clearly and loudly. Some linking words and jokes were mentioned in Tunisian Arabic which is the native language of the participants. Participants had their textbooks and note books open. Some of them were reading and highlighting information and some were taking notes. The teacher wrote on the blackboard the outline of the lesson using white chalk. The low IT level learning context was clear, as figure C, D, demonstrate.

At 9:10 AM, the teacher turned on the projector, told the participants that videos will be projected and notes will be taken by him using PowerPoint. He explicitly said that there is no need to take notes since he promised to print the slides later and give them copies. Since the teacher could not find loud speakers to check out from the technology inventory of the university, he relied on the laptop speakers. The sound volume was not perfect, but, given the size of the class and the number of students, all participants could hear the audio outputs well.
The first video shown was an English language class as a demonstration of an EFL method, which was the Audio Lingual Method. The purpose behind the video was to showcase an EFL teaching method in a “natural” context so that participants can identify the distinctive features first, then the strengths and the weakness second. Despite the fact that the teacher said that there is no need to take notes, some participants were observed taking notes while they are watching these videos. The first video shown was an old VHS format that was converted into digital format. The quality of the video was not high definition, yet the content was easy to view and consume.

The teacher was pausing the video from time to time to ask the participants what they understood and to highlight the teacher’s in demo practices. Participants were clearly attentive, fully concentrating, and seemingly happy to have learning inputs in this digital form. Once the first video completed, the teacher opened PowerPoint and wrote notes that they extracted from their observation of the video. Participants were involved since they were expressing what they understood from the video. The teacher was “converting” participants’ answers from an oral to a written format typing on slides using PowerPoint. (e.g., see Figure E and F).

*Figure E: The Use of Videos in the Technology Group*

*Figure F: The use of PowerPoint in the Technology Group Class*
At 9:36 AM, the second video began. The video was about Community Language Learning, (CLL), and the same process of the first video was being repeated. The teacher explicitly explained that the video is demonstrating another EFL teaching method that is different from the first one. A small sense of boredom started to appear, which is in the case a normal result of getting not easy and a bit challenging input in English for EFLs. This small sense of boredom was broken again by mentioning jokes in Tunisian Arabic. Anecdotal observations showed that the participants were engaged in a meta-cognitive thinking activity. In fact, their remarks and questions reflected a deep understanding and a great analytical thinking.

While watching the videos, the teacher was asking the participants to make reference to the Tunisian educational and cultural context in order to be clear that some classroom practices in the demo video do not fit the Tunisian educational context. At 10:03 AM, the third video was projected and the same process was being repeated. Organization and planning were clear during presentation of the lesson and the students attended to the lesson in a way that demonstrated much practice. There was indeed a learning routine with technology that was established. The teacher was in many occasions “converting” the participants’ words and remarks about the video to accurate and technical terms as they are identified in the EFL teaching pedagogy field of research. At 10:20 AM, the teacher start to wrap up the lesson to give time to hand the post quiz and the IMM Survey with explanations given by the researcher. The researcher asked the participants to answer the survey in an honest and in a truthful way. It was also necessary to remind them that both the post-quiz and the IMM Survey should be anonymous, not part of their grades and they are only for research purposes.
The Non Technology group.

Participants enrolled in the non-technology group were 15 students (14 Females, 1 Male). The same learning objectives, same content was taught to this group with only the medium being different. The class started at 10:40 AM. The teacher greeted everyone in an informal manner and then a discussion about housekeeping issues took place similar to what occurred in the control group class. Participants were handed the pre-quiz with informing them that it is not a part of their grade and there is no need to put their names on the papers. The class took place in the same room of the first class. Same settings only without a laptop and projector combination. (e.g., see Figure G).

![Figure G: The Non Technology Group: No IT Resources Used](image)

The teacher recapped a previous lesson and established the link between the previous lesson and the current lesson. At 11:10, the teacher dived the 15 participants into three groups of five students. The participants moved their chairs and tables to sit closely together. Each group was assigned to a specific part of the textbook. Each section of the textbook deals with an EFL teaching method. The participants were asked to extract from the textbook’ parts assigned to them the distinctive features of each EFL teaching method. The teacher moved between groups, gave more directions and explained in more details (even in Tunisian Arabic) what the task is about.
Participants worked on the assignment in their groups beginning at 11:20 AM. Participants discussed the assignment in L1 with some words/phrases of English plugged in from time to time. At 11:40, the teacher announced that they will discuss the answers and asked the groups to submit their work in 5 minutes. At 11.45, the teacher requested answers from the groups. A table was drawn in the blackboard that included three columns and six lines. The teacher was filling out the table as he is getting the answers form the participants divided among their groups.

Unlike the control group, the teacher was not converting the words of the participants to accurate technical terms because the answers of the participants were extracted directly from the textbook, which were technically correct. Clearly, not using the videos, PowerPoint slides, and a laptop resulted in a quicker pace of the class; the IT tools and managing the IT tools slows the class down. The teacher did not write any answer unless it is discussed and everyone agreed. He also explained everything in detail after it was written on the blackboard. The teacher linked the learning parts of the lesson together and posed questions about differences in the various learning parts. Participants took notes simultaneously even though the teacher did not request participants to take notes.

After 1 hour of instruction the teacher made some jokes about how English language learners for example react to an EL teacher’s directions in a Total Physical Response or in an Audio-lingual class. The reported purpose of the humor was to break the boredom since the teacher’s teaching style is usually entraining. However, the humor was directly relevant to the instruction. At 12:10, the teacher began to wrap up the lesson to provided time to hand the post quiz and the IMM Survey with explanations about the
survey supplied by the researcher. The researcher asked the participants to answer the survey in an honest and truthful way. It was also necessary to remind them that both the post-quiz and the IMM Survey would be anonymous, not part of their grades and they are only for research purposes.

**Findings of the Pre and Post Test**

The unpaired T-test analysis showed that both groups scored higher in the post test. Yet, the non-technology group advanced significantly better comparing to the technology group, which still achieved better mean scores in both tests: pre and post. A possible explanation to this finding is the fact that the non-technology group scored very low in the pretest comparing to the technology group. Thus, the participants in the non-technology group had a larger margin available for potential progress.

Below tables 9, 10, 11 and 12 document the scores:

<table>
<thead>
<tr>
<th>Technology Group Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trial</td>
</tr>
<tr>
<td>Post</td>
</tr>
<tr>
<td>Pre</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non Technology Group Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trial</td>
</tr>
<tr>
<td>Post</td>
</tr>
<tr>
<td>Pre</td>
</tr>
</tbody>
</table>

*Table 9: T-Test Analysis*
<table>
<thead>
<tr>
<th>Equal variances</th>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>F</strong></td>
<td><strong>Sig.</strong></td>
<td><strong>t</strong></td>
</tr>
<tr>
<td><strong>SCC</strong></td>
<td>Equal variances assumed</td>
<td>2.093</td>
</tr>
<tr>
<td><strong>RCE</strong></td>
<td>Equal variances not assumed</td>
<td>788</td>
</tr>
</tbody>
</table>

*Table 10: Sample Test of Technology Group Scores*
Sample Test of Non-Technology Group Scores

<table>
<thead>
<tr>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>F</strong></td>
<td><strong>Sig.</strong></td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>.979</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>2.614</td>
</tr>
</tbody>
</table>

Table 11: Sample Test of Non-Technology Group Scores

Findings of the Instructional Materials Motivation Survey (IMMS ARCS Model)

The analysis of the data drawn from this survey aimed at looking for differences in terms of motivational level between the two groups. The participants among the technology group reported higher motivational level comparing to the experimental group as tables 12 and 13 below show:
## IMMS Scores

<table>
<thead>
<tr>
<th>EFL</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>total</td>
<td>Tech</td>
<td>21</td>
<td>135.52</td>
<td>15.610</td>
</tr>
<tr>
<td>Non Tech</td>
<td>15</td>
<td>122.53</td>
<td>23.071</td>
<td>5.957</td>
</tr>
</tbody>
</table>

*Table 12: IMMS Scores*

### Sample Test of Non-Technology Group Scores

<table>
<thead>
<tr>
<th>Levene's Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>---</td>
<td>-----</td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>2.095</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>1.893</td>
</tr>
</tbody>
</table>

*Table 13: Independent Samples Test for Significance in Difference*
The difference between the technology group and the non-technology group in terms of motivational level is significant. The “Equal Variance not Assumed” (Table 13) should be divided by two (P-value = .071/2 = 0.0355), then a comparison to the p-value to 0.05 should be done. The p-value for the test between the technology and non-technology total scores is .0355 which is less than 0.05. Thus, it is accurate to note that there is an evidence that the mean total score for technology group is significantly higher than the mean scores for the non-technology score. Also, looking at the insider variable of the IMMS; Attention, Relevance, Satisfaction and Confidence (ARCS), the data reveals that the technology group reported significantly higher scores compared to the non-technology group in all ARCS areas.

**ARCS Scores out of 5**

<table>
<thead>
<tr>
<th>ARCS</th>
<th>EFL</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention</td>
<td>Tech</td>
<td>21</td>
<td>3.706349</td>
<td>.5983885</td>
</tr>
<tr>
<td></td>
<td>Non Tech</td>
<td>15</td>
<td>3.477778</td>
<td>.6918364</td>
</tr>
<tr>
<td>Relevance</td>
<td>Tech</td>
<td>21</td>
<td>3.693122</td>
<td>.5430876</td>
</tr>
<tr>
<td></td>
<td>Non Tech</td>
<td>15</td>
<td>3.303704</td>
<td>.6944815</td>
</tr>
<tr>
<td>Confidence</td>
<td>Tech</td>
<td>21</td>
<td>3.777778</td>
<td>.4513355</td>
</tr>
<tr>
<td></td>
<td>Non Tech</td>
<td>15</td>
<td>3.429630</td>
<td>.7075639</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>Tech</td>
<td>21</td>
<td>3.968254</td>
<td>.6446770</td>
</tr>
<tr>
<td></td>
<td>Non Tech</td>
<td>15</td>
<td>3.366667</td>
<td>.6935073</td>
</tr>
</tbody>
</table>

*Table 14: ARCS Scores Analysis and Comparison*
The Professor’s Voice: Interview

The interview with the instructor of the class, where the study took place, revealed valuable insights and opinions. The instructor has more than 15 years of teaching experience; from elementary school level up to graduate course level currently. In response to what the T-Test analysis of the pre and post quiz showed, the professor said that it was expected for him since he was sure that the experimental group (non-technology) are low achiever comparing to the control group (technology group). He stated that even in terms of grades in his class, there is a significant difference in favor of the technology group. Also, he claimed that he did his best in delivering the content of the lesson in a clear way for both groups in order to avoid favoring one group on the other. He added that he used more motivational techniques for the students in the non-technology group, since he is aware of the fact that the textbook does not motivate like videos and IT in general. In fact, he argues that student to student collaboration in a group work format was the main reason behind having the participants in the non-technology group advanced significantly better in the post-test. The teacher said that even in absence of technology/IT, teachers have to be creative in creating a motivational atmosphere for learning that appeals to students.

In a question about the norms of the instructional materials used at the institution, the teacher noted that it depends on the teachers who have different views and approaches in designing their materials. Some teachers simply use a collection of articles as a textbook. Some others invest more time and effort in creating their learning materials. He argues that multimedia materials and IT based media are good and beneficial, yet, students always need text based documents. Indeed, according to the teacher, the students
under the scope are EFL learners who need access to materials that they can use to revise during the exam preparation period.

The integration and the use of technology at the university where the study took place is a major undertaking. As it was mentioned earlier in describing the “experiment” procedures, it is a low technology learning context where even initial levels of technology set up require complete independence of the teacher since no technician was in the room to do the setup and the rooms are not equipped with basic IT tools. In fact, the teacher reported that lack of IT resources, the lack of support and training, plus bureaucracy are making attempts of IT integration hard and not doable at his place of work. He provided an anecdote from his professional experience where the decision makers at the university under the scope of this study did not understand the value of technology integration since students are learning “just English.” Unlike biology or chemistry where these decision makers claim to see more value in IT integration. He also mentioned that requesting purchase of a projector always takes about two years since the request follow a long bureaucratic procedures. Answering a follow up question about what he can predict about the future prospects of IT presence in the Tunisian higher educational system, given the current post-revolutionary period, the teacher said that he is afraid of losing motivation to implement IT based lessons because of the lack of progress from administration.

Lastly, after the researcher explained the theoretical framework of this study to the teacher with details about the Clark-Kozma debate, the researcher asked the teacher to try applying the replaceability challenge on his lesson. The teacher argues that a traditional alternative way to showcase EFL teaching methods in natural contexts can be done through an observation of EFL classes, where teachers and students are in action. Or
just by simply sticking to the textbook. He claims that it will be a valuable experience to the students to do observations in schools. However, the large number of students enrolled in his class plus many logistics and bureaucratic issues make the observations impossible. That being said, the teacher agrees with Kozma’s approach about the irrelevance of applying Clark’s replaceability challenge since the lesson and the instructional strategy were designed around the video materials. The teacher reported that using IT in teaching EFL and preparing future EL teachers made a huge impact on his students. He stated that many students who are “tech savvy” always go beyond the average in looking for more online resources and ask him for guidance and suggestions.

**Answering the Research Questions**

**What are the attitudes and perceptions of Tunisian college students toward information technology?** The findings of this study based on the survey of attitude and perceptions toward IT showed that students in the university under the scope of the study have a positive attitudes and perception toward information technology. Tunisian students at this university have a high level of technology literacy. Also, they reported that IT integration in higher education is a source of a great benefit for them.

**What are the effect of information technology on college students?**

According to the T-test analysis of the pre and the post quiz, IT usage did not greatly affect the performance of the student participants in this study. Both groups scored better in the post-test as shown earlier. Measuring performance in this study most likely would have been enhanced with an intervention using a larger span of time rather than a two hours class period. Thus, the findings are not as generalizable as was desired. Also, since the instructional activities in the two groups were different, it is not accurate
to compare the two group’ scores in this respect. In addition, scoring better in the post-test can potentially be explained with reference to the Hawthorne effect. This effect is a form of reactivity whereby subjects improve or modify an aspect of their behavior being experimentally measured. It occurs simply in response to the fact that participants know they are being studied, not in response to any particular experimental manipulation. However, it is obvious that IT had a great effect on motivation and interest in the subject. As the non-technology group reported significantly lower motivational level, thus lower Attention, Relevance, Confidence and Satisfaction toward the non IT based instructional materials being used, the technology group were more motivated toward the materials and the lesson, as shown in table 14. Also, both groups reported high interest in the subject since the teacher always integrated IT resources and media in the lessons.

**How information technologies integrated in higher education classes in Tunisia?** From the interview data with the teacher and from the findings of this study, it is clear that IT integration should have a good amount of support, thoughtful pedagogical planning and stakeholder’ readiness. IT tools alone with no relevance presence to the instructional content will lead to a negative impact. Also, IT integration can be best integrated to overcome some challenges in terms of authenticity of the materials, quality of the educational media and to boost students’ motivation and interest in learning.

**Conclusion**

The findings of this study provide a good depiction of the situation of the IT presence in public Tunisian higher Ed institutions. Clearly, IT had a great effect on students’ motivation and interest in the subject. As the non-technology group reported significantly lower motivational level, thus lower Attention, Relevance, Confidence and
Satisfaction toward the instructional materials being used; the technology group were more motivated toward the materials and the lesson. IT integration should have a good amount of support, thoughtful pedagogical planning and stakeholder’ readiness based on interview data from the teachers and other findings. IT tools alone with no relevant presence to the instructional content will lead to a negative impact.
Chapter Five: Conclusion

Summary of the Study

This mixed method case study approach aimed at investigating the effect of information technology on EFL Tunisian college students. The variables investigated include: attitudes and perceptions, effect on motivation, interest, and on academic performance. The Research Questions included: (A) What are the attitudes and perceptions of Tunisian college students toward information technology? (B) What are the effect of information technology on college students? C) How information technologies integrated in higher education classes in Tunisia?

After reviewing an extensive literature in the field that framed challenges and opportunities of IT integration in EFL learning, a mixed method case study research design was developed. The research method was driven by Yin’s case study framework. The study and the bias of the researcher were driven by Chapelle (2003) and Bruce and Hogan (1998), as well as the Clark-Kozma debate. While Bruce and Hogan stress the importance of IT effect investigation since IT is slipping into the background and becoming invisible, the Clark-Kozma debate deals with effect of technology media on learning while raising the question of the effect of the technology media on learning VS the method’s effect on learning. Also, the lack of research done on the Tunisian higher Ed system served as the main motivation to conduct this case study research in order to close a gap in the literature.

The findings of this study reported a depiction of the situation of IT in the Tunisian public higher Ed system through a representative sample of English language majors at major southern university in Tunisia.
Discussion

Despite the limited resources of IT integration at the university under the scope of the study, this environment constitutes a good representative example of many public higher Ed institutions in Tunisia. Limited IT usage and integration did not prevent Tunisian students from having positive attitudes and perceptions toward IT. In fact, Tunisian youths who used heavily social media and different computer-internet technologies during the revolution also think that IT have a great place in their advanced education as they think that it benefit them grandly as revealed in by the survey results in this study. The findings demonstrate that IT had a great effect on students’ motivation and interest in the subject. IT integration should have a good amount of support, thoughtful pedagogical planning and stakeholder’ readiness as reflected in the interview with the teacher and other collected data. IT tools alone with no relevant presence to the instructional content will lead to a negative impact.

Recommendations for Implementation

The findings of this study should be viewed as a foundation for future research in the reteam of questioning the technology presence in education from a social analyst perspective. The findings of this study and other similar studies should be taken into account by decision makers in planning and implementing educational reforms. Also, despite the low technology context where the study took place, encouraging university administrations and professors to integrate more IT resources for learning is still highly important. And, continuing this line of research to investigate variable in authentic contexts should continue.
Directions for Future Inquiry

The findings of this study are valuable and can be generalizable to an extent on the half million Tunisian students attending universities in Tunisia. The findings also can be also generalized on many EFL learners not only in Tunisia, but also in many other similar countries in the North African region, and other countries that share the same socio-economic conditions and a similar value of English language. The findings of this study could be even more valuable with a different research design to allow more time to measure the effect and controlling other variable (e.g., students GPAs and grades) while also randomizing the placement of students into groups could add significant value and insight into the current study. Conducting further research to obtain inferential statistical analysis through experimental research designs is needed with a larger number of participants. Further research will allow to generalize findings on wider population.

Continued investigation inside the Tunisian higher Ed system to complete the country’s academic profile in scientific journals, and to prepare accurate findings for decision makers before implementing reforms and changes is needed. There are multiple issues and topics to investigate that were not covered by the literature neither in this study.
References


doi:doi:10.1111/j.1467-8535.2009.00996.x


http://core.ecu.edu/psyc/wuenschk/StatHelp/Likert.htm


Zamorshchikova, L., Egorova, O., & Popova, M. (2011). Internet Technology-Based Projects in Learning and Teaching English as a Foreign Language at Yakutsk State University. International Review of Research in Open and Distance Learning, 72-76.
Appendixes

I. Appendix A
   1. Human Subject Approval form
   2. Permissions

II. Appendix B
   1. Data Collection tools and Surveys
DATE: July 19, 2012

TO: Ahmed Lachheb, MA
FROM: Grand Valley State University Human Research Review Committee
STUDY TITLE: [355611-1] Master Thesis in Education Technology
REFERENCE #: 13-005-H
SUBMISSION TYPE: New Project

ACTION: APPROVED
EFFECTIVE DATE: July 19, 2012
REVIEW TYPE: Exempt Review

Thank you for your submission of materials for this research study. The Human Research Review Committee has reviewed your submission and approved your research plan application under Exempt Review. This approval is based on no greater than minimal risk to research participants. All research must be conducted in accordance with this approved submission.

Please note that the following statement grossly overstates the potential outcomes of this limited study. Since you will not be using random sampling to select an unknown number of subjects, generalizing results to other settings and populations is highly problematic. The potential benefits of the study have been exaggerated and you are therefore instructed to refrain from using it in any promotional materials for recruitment purposes and strongly advised not to use it in describing any conclusions drawn:

If the hypothesis turns to be true, the interpretation of the results can be used to generalize the positive effects of IT tools on all subjects’ areas, starting by the content ones, on all EFL learners in Tunisia and on all EFL learners in a global wise."

This EXEMPT research protocol has been approved by the Human Research Review Committee at Grand Valley State University. File No. 13-005-H.

Exempt protocols do not require formal renewal. However, we do confirm on an annual basis that the research continues to meet the criteria for exemption and that there have been no significant changes in activity or key personnel. By July 19, 2013, please complete the brief Continuing Review Application Form, available in your IRBNet Project Designer, or from our website, www.gvsu.edu/hrrc, and submit this form via IRBNet.

Once study enrollment and data analysis have been concluded, please complete the Closed Protocol Reporting Form on our website, and upload a saved copy to IRBNet.

This project remains subject to the research ethics standards of HRRC policies and procedures pertaining to exempt studies.

Please note the following in order to comply with federal regulations and HRRC policy:
1. Any revision to previously approved materials must be approved by this office prior to initiation. Please use the Change in Protocol forms for this procedure. This includes, but is not limited to, changes in key personnel, study location, participant selection process, etc.

2. All UNEXPECTED PROBLEMS and SERIOUS ADVERSE EVENTS to participants or other parties affected by the research must be reported to this office within two days of the event occurrence. Please use the UP/SAE Report form.

3. All instances of non-compliance or complaints regarding this study must be reported to this office in a timely manner. There are no specific forms for this report type.

If you have any questions, please contact the HRRC Office, Monday through Thursday, at (616) 331-3197 or hrcc@gvsu.edu. The office observes all university holidays, and does not process applications during exam week or between academic terms. Please include your study title and reference number in all correspondence with this office.

cc:
Ahmed Lachheb

From: John Keller <jkeller@fsu.edu>
Sent: Wednesday, May 30, 2012 12:47 PM
To: Ahmed Lachheb
Subject: RE: Using the ARCS model instruments for my MA thesis
Attachments: Keller 2010 ARCS Measurement Surveys.pdf

Dear Ahmed,

Thank you for your interest in these items. You are welcome to use them without charge. They are contained in my book (see signature section) and I am attaching a segment that contains them.

Best wishes for success in your research!

Sincerely,
John K.

John M. Keller, Ph.D.
Professor Emeritus
Educational Psychology and Learning Systems
Florida State University

9705 Waters Meet Drive
Tallahassee, FL 32312-3746
Phone: 850-294-3908

Official ARCS Model Website: http://arcsmodel.com
Professional Website: http://mailer.fsu.edu/~jkeller/JohnsHome/


_ASCIIEND_
Ahmed Lachheb

From: Chokri smaoui <smaoui2002@yahoo.com>
Sent: Monday, July 02, 2012 4:41 AM
To: Ahmed Lachheb
Subject: Re: Permission to Collect Data from the English Department for my MA Thesis

Ahmed,
First of all I wish you the best in your research. As for the possibility of accessing some of our classrooms at the Faculty of Letters & Humanities of Sfax, there is absolutely no problem in doing that. Just remind me a few days before you start this process of data collection.

Best

Chokri Smaoui
Associate Professor
Head of the English Department
Greetings Lachheb,

You have permission to use the TAT for your master's thesis study.

Good luck on your research, and please let us know your findings.

Regards,
Gerald Knezek

Delivered-To: gknezek@gmail.com
Authentication-Results: mx.google.com; spf=pass (google.com: domain of rhonda.christensen@gmail.com designates 209.85.213.53 as permitted sender)
smtp.mail=rhonda.christensen@gmail.com; dkim=pass header.i=@gmail.com
DKIM-Signature: v=1; a=rsa-sha256; c=relaxed/relaxed;
d=gmail.com; s=20120113;
h=subject:references:from:content-type:x-mailer:message-id:date:to
:content-transfer-encoding:mime-version;
bh=h4/XvQq8MILYd8BgiZRGVCfmrwk4AzM/ZdEx9XRsTvU=;
b=LqUV8xMgHtC/hJ8fAb3zAIo1+r4JbEbQmbi2vzl3BbzkFskqN3s3E/28EQQ+c+dTD
J901RJ5o2WruxrB9EABB352VvK1ZBgArKly/EAHJlGmRGJuEZpBmJS0z/NnNPlVx6ry
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9X
        vT6s/NGKp3McSCMedzGLjBoqU9Rg3MIYyAsl9jVmpfrHafR9eL8v51D9GhD8Wl
XsKR
          BkQFa5k/eht7Nvst/E/lNbZfNZxgLiOdGGlTv5ZjMdn2WAznLUVUx0c9wl+z3R3EiL2E
N8Bw==
Subject: Fwd: Using the Survey of Teachers' Attitudes Toward Information Technology for my MA thesis
From: Rhonda Christensen <rhonda.christensen@gmail.com>
Date: Sun, 1 Jul 2012 23:02:46 -0400
To: Gerald Knezek <gknezek@gmail.com>

Sent from my iPhone

Begin forwarded message:
> From: Ahmed Lachheb <lachheah@gvsu.edu>
> Date: July 1, 2012 10:23:30 PM EDT
> To: Rhonda Christensen <rhonda.christensen@gmail.com>
> Subject: RE: Using the Survey of Teachers' Attitudes Toward Information Technology for my
Course Interest Survey

Dear participant:
This survey is anonymous. Collected data will not retain any biographical information that will allow identification of a specific participant. Participation in the survey is voluntary. You have the right to decline participation BEFORE the survey is submitted. The collected data will not be shared with the professor. None has access to the data except me and my thesis supervisor at Grand Valley State University. The data will be revealed when the thesis is published. Either way, there is no harm of any kind on you when the final results are revealed!

There are 34 statements in this survey. Please think about each statement in relation to this class you are taking with this professor. Give the answer that TRULY applies to you, and NOT what you would like to be true, or what you think others want to hear. Think about each statement by itself and indicate how true it is. Do NOT be influenced by your answers to other statements. Record your responses on the answer sheet that is provided and follow any additional instructions that may be provided in regard to the answer sheet that is being used with this survey.

* Required

1. The instructor knows how to make us feel enthusiastic about the subject matter of this course. *
Choose ONLY ONE
☐ Not True
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

2. The things I am learning in this course will be useful to me. *
Choose ONLY ONE
☐ Not True
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

3. I feel confident that I will do well in this course. *
Choose ONLY ONE
☐ Not True
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

4. This class has very little in it that captures my attention *

https://docs.google.com/a/mail.gvsu.edu/spreadsheet/viewform?formkey=dF9ZdzBrSlJCM1g1eUJ6S1g…
Course Interest Survey

5. The instructor makes the subject matter of this course seem important. *

Choose ONLY ONE

- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

6. You have to be lucky to get good grades in this course. *

Choose ONLY ONE

- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

7. I have to work too hard to succeed in this course. *

Choose ONLY ONE

- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

8. I do NOT see how the content of this course relates to anything I already know. *

Choose ONLY ONE

- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true
9. Whether or not I succeed in this course is up to me. *
Choose ONLY ONE
- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

10. The instructor creates suspense when building up to a point. *
Choose ONLY ONE
- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

11. The subject matter of this course is just too difficult for me. *
Choose ONLY ONE
- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

12. I feel that this course gives me a lot of satisfaction. *
Choose ONLY ONE
- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

13. In this class, I try to set and achieve high standards of excellence. *
Choose ONLY ONE
- Not True
- Slightly true
- Moderately true
14. I feel that the grades or other recognition I receive are fair compared to other students.

Choose ONLY ONE
- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

15. The students in this class seem curious about the subject matter.

Choose ONLY ONE
- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

16. I enjoy working for this course.

Choose ONLY ONE
- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

17. It is difficult to predict what grade the instructor will give my assignments.

Choose ONLY ONE
- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

18. I am pleased with the instructor’s evaluations of my work compared to how well I think I have done.
19. I feel satisfied with what I am getting from this course. *
Choose ONLY ONE

- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

20. The content of this course relates to my expectations and goals. *
Choose ONLY ONE

- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

21. The instructor does unusual or surprising things that are interesting. *
Choose ONLY ONE

- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

22. The students actively participate in this class. *
Choose ONLY ONE

- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true
23. To accomplish my goals, it is important that I do well in this course. *
Choose ONLY ONE
☐ Not True
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

24. The instructor uses an interesting variety of teaching techniques. *
Choose ONLY ONE
☐ Not True
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

25. I do NOT think I will benefit much from this course. *
Choose ONLY ONE
☐ Not True
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

26. I often daydream while in this class. *
Choose ONLY ONE
☐ Not True
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

27. As I am taking this class, I believe that I can succeed if I try hard enough. *
Choose ONLY ONE
☐ Not True
☐ Slightly true
☐ Moderately true
28. The personal benefits of this course are clear to me. *
Choose ONLY ONE
- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

29. My curiosity is often stimulated by the questions asked or the problems given on the subject matter in this class. *
Choose ONLY ONE
- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

30. I find the challenge level in this course to be about right: neither too easy not too hard. *
Choose ONLY ONE
- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

31. I feel rather disappointed with this course. *
Choose ONLY ONE
- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

32. I feel that I get enough recognition of my work in this course by means of grades,
33. The amount of work I have to do is appropriate for this type of course. *
Choose ONLY ONE
- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

34. I get enough feedback to know how well I am doing. *
Choose ONLY ONE
- Not True
- Slightly true
- Moderately true
- Mostly true
- Very true

Submit
Instructional Material Motivational Survey

Dear participant:
This survey is anonymous. Collected data will not retain any biographical information that will allow identification of a specific participant. Participation in the survey is voluntary. You have the right to decline participation BEFORE the survey is submitted. The collected data will not be shared with the professor. None has access to the data except me and my thesis supervisor at Grand Valley State University. The data will be revealed when the thesis is published. Either way, there is no harm of any kind on you when the final results are revealed!

There are 36 statements in this survey. Please think about each statement in relation to this class you are taking with this professor. Give the answer that TRULY applies to you, and NOT what you would like to be true, or what you think others want to hear. Think about each statement by itself and indicate how true it is. Do NOT be influenced by your answers to other statements. Record your responses on the answer sheet that is provided and follow any additional instructions that may be provided in regard to the answer sheet that is being used with this survey.

* Required

1. When I first looked at this lesson, I had the impression that it would be easy for me. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

2. There was something interesting at the beginning of this lesson that got my attention. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

3. This material was more difficult to understand than I would like for it to be. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

4. After reading the introductory information, I felt confident that I knew what I was supposed to learn from this lesson. *

https://docs.google.com/a/mail.gvsu.edu/spreadsheet/viewform?formkey=dF9uN2tfcGp4ZlY4NUR6TDI…
Choose ONLY ONE

5. Completing the exercises in this lesson gave me a satisfying feeling of accomplishment.

Choose ONLY ONE

6. It is clear to me how the content of this material is related to things I already know.

Choose ONLY ONE

7. Many of the pages had so much information that it was hard to pick out and remember the important points.

Choose ONLY ONE

8. These materials are eye-catching.

Choose ONLY ONE
9. There were stories, pictures, or examples that showed me how this material could be important to some people. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

10. Completing this lesson successfully was important to me. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

11. The quality of the writing helped to hold my attention. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

12. This lesson is so abstract that it was hard to keep my attention on it. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

13. As I worked on this lesson, I was confident that I could learn the content. *
Choose ONLY ONE

14. I enjoyed this lesson so much that I would like to know more about this topic. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

15. The pages of this lesson look dry and unappealing. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

16. The content of this material is relevant to my interests. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

17. The way the information is arranged on the pages helped keep my attention. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true
18. There are explanations or examples of how people use the knowledge in this lesson. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

19. The exercises in this lesson were too difficult. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

20. This lesson has things that stimulated my curiosity. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

21. I really enjoyed studying this lesson. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

22. The amount of repetition in this lesson caused me to get bored sometimes. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
23. The content and style of writing in this lesson convey the impression that its content is worth knowing.  
Choose ONLY ONE
- Not true
- Slightly true
- Moderately true
- Mostly true
- Very true

24. I learned some things that were surprising or unexpected.  
Choose ONLY ONE
- Not true
- Slightly true
- Moderately true
- Mostly true
- Very true

25. After working on this lesson for awhile, I was confident that I would be able to pass a test on it.  
Choose ONLY ONE
- Not true
- Slightly true
- Moderately true
- Mostly true
- Very true

26. This lesson was not relevant to my needs because I already knew most of it.  
Choose ONLY ONE
- Not true
- Slightly true
- Moderately true
- Mostly true
- Very true

27. The wording of feedback after the exercises, or of other comments in this lesson,
helped me feel rewarded for my effort. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

28. The variety of reading passages, exercises, illustrations, etc., helped keep my attention on the lesson. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

29. The style of writing is boring. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

30. I could relate the content of this lesson to things I have seen, done, or thought about in my own life. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
☐ Mostly true
☐ Very true

31. There are so many words on each page that it is irritating. *
Choose ONLY ONE
☐ Not true
☐ Slightly true
☐ Moderately true
32. It felt good to successfully complete this lesson. *
Choose ONLY ONE
[ ] Not true
[ ] Slightly true
[ ] Moderately true
[ ] Mostly true
[ ] Very true

33. The content of this lesson will be useful to me. *
Choose ONLY ONE
[ ] Not true
[ ] Slightly true
[ ] Moderately true
[ ] Mostly true
[ ] Very true

34. I could not really understand quite a bit of the material in this lesson. *
Choose ONLY ONE
[ ] Not true
[ ] Slightly true
[ ] Moderately true
[ ] Mostly true
[ ] Very true

35. The good organization of the content helped me be confident that I would learn this material. *
Choose ONLY ONE
[ ] Not true
[ ] Slightly true
[ ] Moderately true
[ ] Mostly true
[ ] Very true

36. It was a pleasure to work on such a well-designed lesson. *
Choose ONLY ONE
[ ] Not true
[ ] Slightly true
[ ] Moderately true
[ ] Mostly true
[ ] Very true
Students' Attitudes Toward Information Technology Survey

Dear participant:
This survey is anonymous. Collected data will not retain any biographical information that will allow identification of a specific participant. Participation in the survey is voluntary. You have the right to decline participation BEFORE the survey is submitted. The collected data will not be shared with the professor. None has access to the data except me and my thesis supervisor at Grand Valley State University. The data will be revealed when the thesis is published. Either way, there is no harm of any kind on you when the final results are revealed! Please complete all items even if you feel that some are redundant. This may require 10-15 minutes of your time. Usually it is best to respond with your first impression, without giving a question much thought. Your answers will remain confidential.
Thank you for your cooperation!

* Required

1. Do you have access at home to computer *
   - Yes
   - No

2. Do you have access to computer in class *
   - Yes (Personal laptop)
   - No

3. Do you have access to the Internet at home *
   - Yes
   - No

4. Do you have access to the Internet in class *
   - Yes
   - No

5. How would you rate your experience with computers? *
   Check all that apply
   - I have never used a computer and I don't plan to anytime soon.
   - I have never used a computer but I would like to learn.
   - I use applications like word processing, spreadsheets, etc.
   - I use computers for learning in the classroom.
   - I use computers for learning at home.
6. If you use computers at home or in the classroom, how often?
   - [ ] Daily
   - [ ] Weekly
   - [ ] Occasionally

7. Currently I use the computer for learning approximately _____ hours per week in the classroom/home.

8. At the beginning of this school year, I used the computer for learning approximately _____ hours per week in the classroom/home.

9. If you do use computers, what type of training have you received? *
   Check all that apply
   - [ ] No training
   - [ ] Basic Computer Literacy (on/off operations, how to run programs)
   - [ ] Computer applications (word processing, spreadsheets)
   - [ ] Computer integration (how to use in learning curriculum)

10. Total days of integration training: _____

11. Where did you receive your training? *
    Rank order all that apply
    - [ ] Self-taught
    - [ ] School district
    - [ ] College or university
    - [ ] Other: _____________

12. Number of years since your first computer training: _____ *

13. I enjoy doing things on a computer. *
    Please circle only ONE choice which best shows how you feel.
    - [ ] Strongly Disagree
    - [ ] Disagree
14. I am tired of using a computer. *
Please circle only ONE choice which best shows how you feel.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

15. I will be able to get good grades if I learn how to use a computer *
Please circle only ONE choice which best shows how you feel.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

16. I concentrate on a computer when I use one. *
Please circle only ONE choice which best shows how you feel.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

17. I enjoy computer games very much. *
Please circle only ONE choice which best shows how you feel.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

18. I would study harder if I could use computers more often *
Please circle only ONE choice which best shows how you feel.
19. I think that it takes a long time to finish study work when I use computer *
Please circle only ONE choice which best shows how you feel.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

20. I know that computers give me opportunities to learn many new things. *
Please circle only ONE choice which best shows how you feel.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

21. I can learn many things when I use a computer. *
Please circle only ONE choice which best shows how you feel.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

22. I enjoy lessons on the computer. *
Please circle only ONE choice which best shows how you feel.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree
23. I believe that it is very important for me to learn how to use a computer. *
Please circle only ONE choice which best shows how you feel.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

24. I think that computers are very easy to use. *
Please circle only ONE choice which best shows how you feel.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

25. I feel comfortable studying with a computer. *
Please circle only ONE choice which best shows how you feel.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

26. I feel comfortable studying with a computer. *
Please circle only ONE choice which best shows how you feel.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

27. I get a sinking feeling when I think of trying to use a computer. *
Please circle only ONE choice which best shows how you feel.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree
28. Working with a computer makes me nervous. *
Please circle only ONE choice which best shows how you feel.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

29. Using a computer is very frustrating. *
Please circle only ONE choice which best shows how you feel.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

30. I will do as little studying with computers as possible. *
Please circle only ONE choice which best shows how you feel.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

31. Computers are difficult to use. *
Please circle only ONE choice which best shows how you feel.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

32. Computers do not scare me at all. *
Please circle only ONE choice which best shows how you feel.
- Strongly Disagree
- Disagree
- Undecided
- Agree
33. I can learn more from books than from a computer. *
Please circle only ONE choice which best shows how you feel.

- Strongly Agree
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

**Computers are:** *

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
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<tbody>
<tr>
<td>Unlikable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Likable</td>
</tr>
</tbody>
</table>

**Computers are:** *

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unhappy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Happy</td>
</tr>
</tbody>
</table>

**Computers are:** *

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Good</td>
</tr>
</tbody>
</table>

**Computers are:** *

<table>
<thead>
<tr>
<th>1</th>
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<th>3</th>
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<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unpleasant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pleasant</td>
</tr>
</tbody>
</table>

**Computers are:** *

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tense</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Calm</td>
</tr>
</tbody>
</table>

**Computers are:** *

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncomfortable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Comfortable</td>
</tr>
</tbody>
</table>
Computers are: *

1 2 3 4 5 6 7

Artificial ☐ ☐ ☐ ☐ ☐ ☐ Natural

Computers are: *

1 2 3 4 5 6 7

Empty ☐ ☐ ☐ ☐ ☐ ☐ Full

Computers are: *

1 2 3 4 5 6 7

Dull ☐ ☐ ☐ ☐ ☐ ☐ Exciting

Computers are: *

1 2 3 4 5 6 7

Suffocating ☐ ☐ ☐ ☐ ☐ ☐ Fresh

Computers do not scare me at all. *
Please circle only ONE choice which best describes how you feel about that statement.

☐ Strongly Disagree
☐ Disagree
☐ Undecided
☐ Agree
☐ Strongly Agree

I would like studying with computers. *
Please circle only ONE choice which best describes how you feel about that statement.

☐ Strongly Disagree
☐ Disagree
☐ Undecided
☐ Agree
☐ Strongly Agree

Figuring out computer problems does not appeal to me. *
Please circle only ONE choice which best describes how you feel about that statement.

☐ Strongly Disagree
I’ll need a firm mastery of computers for my future studies. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

I don’t understand how some people can spend so much time studying with computers and seem to enjoy it. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

I can’t think of any way that I will use computers in my career. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

I do not think I could handle a computer course *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

I have a lot of self-confidence when it comes to working with computers *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Knowing how to use computers is a worthwhile skill. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Studying using computers would be very interesting. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Computer lessons are a favorite subject for me. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

I want to learn a lot about computers. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree
A computer test would scare me. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

I see the computer as something I will rarely use in my daily life as an adult. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Computers have the potential to control our lives. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Our country relies too much on computers. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

I will use a computer in my future occupation. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
Strongly Agree

Computers dehumanize society by treating everyone as a number. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

I feel apprehensive about using a computer. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Computers are changing the world too rapidly. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Computers isolate people by inhibiting normal social interactions among users. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

If I had to use a computer for some reason, it would probably save me some time and work. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
 Having a computer available to me would improve my general satisfaction. * 
  Please circle only ONE choice which best describes how you feel about that statement.
  - Strongly Disagree
  - Disagree
  - Undecided
  - Agree
  - Strongly Agree

 If I had a computer at my disposal, I would try to get rid of it. * 
  Please circle only ONE choice which best describes how you feel about that statement.
  - Strongly Disagree
  - Disagree
  - Undecided
  - Agree
  - Strongly Agree

 I sometimes get nervous just thinking about computers. * 
  Please circle only ONE choice which best describes how you feel about that statement.
  - Strongly Disagree
  - Disagree
  - Undecided
  - Agree
  - Strongly Agree

 I will probably never learn to use a computer. * 
  Please circle only ONE choice which best describes how you feel about that statement.
  - Strongly Disagree
  - Disagree
  - Undecided
  - Agree
  - Strongly Agree

 I sometime feel intimidated when I have to use a computer * 
  Please circle only ONE choice which best describes how you feel about that statement.
  - Strongly Disagree
Computers will improve education. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

If there was a computer in my classroom it would help me to be a better student *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Someday I will have a computer in my home. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Computers could enhance remedial instruction. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Computers can be used successfully with courses which demand creative activities. *
Please circle only ONE choice which best describes how you feel about that statement.

Computers can be a useful instructional/learning aid in almost all subject areas.  
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Use of computers in education almost always reduces the personal treatment of students.  
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

I feel at ease when I am around computers.  
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Learning about computers is boring to me.  
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree
I like learning on a computer. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Working with a computer would make me very nervous. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

I think working with computers would be enjoyable and stimulating. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Computers are not exciting. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Studying about computers is a waste of time. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
I enjoy learning how computers are used in our daily lives. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Computers would increase my productivity. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Computers would help me learn. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Computers improve the overall quality of life. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

The challenge of learning about computers is exciting. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
Learning to operate computers is like learning any new skill - the more you practice, the better you become. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

I am afraid that if I begin to use computers I will become dependent upon them and lose some of my reasoning skills. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

I dislike working with machines that are smarter than I am. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

If given the opportunity, I would like to learn about and use computers. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

I feel computers are necessary tools in both educational and work settings. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree
Strongly Disagree
Disagree
Undecided
Agree
Strongly Agree

Computers intimidate and threaten me. *
Please circle only ONE choice which best describes how you feel about that statement.

Strongly Disagree
Disagree
Undecided
Agree
Strongly Agree

Working with a computer makes me feel tense and uncomfortable. *
Please circle only ONE choice which best describes how you feel about that statement.

Strongly Disagree
Disagree
Undecided
Agree
Strongly Agree

Computers are difficult to understand. *
Please circle only ONE choice which best describes how you feel about that statement.

Strongly Disagree
Disagree
Undecided
Agree
Strongly Agree

Working with computers makes me feel isolated from other people. *
Please circle only ONE choice which best describes how you feel about that statement.

Strongly Disagree
Disagree
Undecided
Agree
Strongly Agree
I would like to learn more about computers. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Working with computers means working on your own, without contact with others. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Using a computer prevents me from being creative. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

You have to be a “brain” to work with computers. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

Not many people can use computers. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree
I get a sinking feeling when I think of trying to use a computer. *
Please circle only ONE choice which best describes how you feel about that statement.
- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Undecided
- [ ] Agree
- [ ] Strongly Agree

Computers frustrate me. *
Please circle only ONE choice which best describes how you feel about that statement.
- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Undecided
- [ ] Agree
- [ ] Strongly Agree

I will use a computer as soon as possible. *
Please circle only ONE choice which best describes how you feel about that statement.
- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Undecided
- [ ] Agree
- [ ] Strongly Agree

I enjoy computer work. *
Please circle only ONE choice which best describes how you feel about that statement.
- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Undecided
- [ ] Agree
- [ ] Strongly Agree

I would never take a job where I had to work with computers. *
Please circle only ONE choice which best describes how you feel about that statement.
- [ ] Strongly Disagree
- [ ] Disagree
- [ ] Undecided
- [ ] Agree
Electronic mail (E-mail) will be an effective means of disseminating class information and assignments. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

I prefer E-mail to traditional class handouts as an information disseminator. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

More courses should use E-mail to disseminate class information and assignments. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

E-mail provides better access to the instructor. *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

The use of E-mail creates more interaction between students enrolled in the course *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
The use of E-mail creates more interaction between student and instructor *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

The use of E-mail increases motivation for the course *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

The use of E-mail makes the course more interesting. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

The use of E-mail makes the student feel more involved. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

The use of E-mail helps the student to learn more. *
Please circle only ONE choice which best describes how you feel about that statement.
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree
The use of E-mail helps provide a better learning experience.  *
Please circle only ONE choice which best describes how you feel about that statement.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

To me, Email is *

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<td><strong>For my teachers, using computers in the classroom is</strong></td>
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<td>Exciting</td>
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<td>Means nothing</td>
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[Submit]